

## GCO4 & GCO6 SERIES

### FULL SIZE GAS CONVECTION OVENS



GCO4C SHOWN

MODEL	ML
GCO4S	52425
GCO4D	52354
GCO4C	52357
GCO6D	114729
GCO6C	114730

#### - NOTICE -

This Manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified. If you have attended a Vulcan Service School for this product, you may be qualified to perform all the procedures described in this manual.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

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# GENERAL

## GENERAL

### General

Procedures in this manual will apply to all models unless specified. Pictures and illustrations can be of any model unless the picture or illustration needs to be model specific.

### Models

MODEL	ML	CAVITY DEPTH	CON-TROLS	TIMER
GCO4S	52425	20"	Mechanical	1-Hr Dial
GCO4D	52354	20"	Solid State	1-Hr Dial
GCO6D	114729	28"	Solid State	1-Hr Dial
GCO4C	52357	20"	Computer	Electronic
GCO6C	114730	28"	Computer	Electronic

### Front Serviceability

It is recommended that the service be performed from the rear and right side of the oven when servicing the combustion blower, orifice, electrodes and adjusting the gas pressure. However, if the oven can not be accessed from the rear or right side, procedures on the fore mentioned components can be performed from the front of the oven.

## INSTALLATION

Generally, installations are made by the dealer or others contracted by the dealer or owner.

Detailed installation instructions are included in the "Instructions" manual which is sent with each unit.

## OPERATION

Detailed operation instructions are included with each oven.

## SPECIFICATIONS

### Electrical

Voltage - 120/60/1

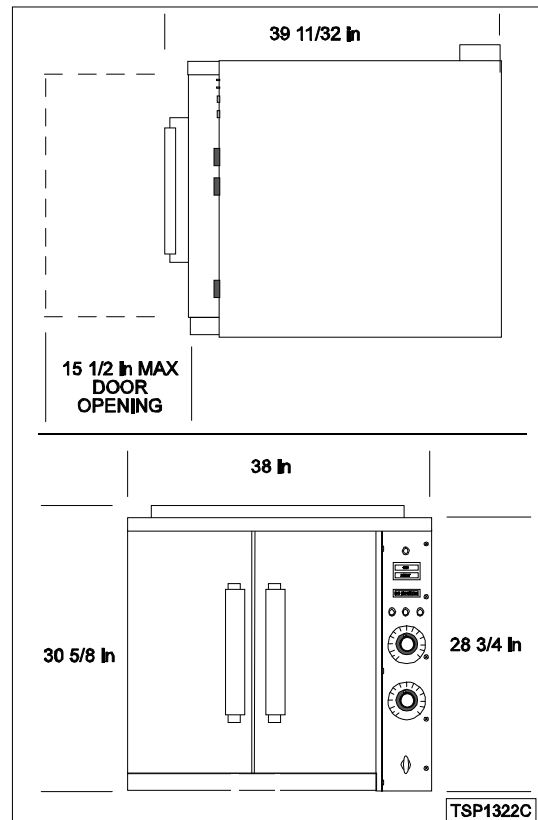
Amps - 10 Amps

### BTU Rating

Natural Gas - 40,000 BTU input at 3.5 in. W.C.

Propane Gas - 40,000 BTU input at 10.0 in. W.C.

### Dimensions



## LUBRICATION

Motor bearings are sealed and pre-lubricated.

## CLEANING PROCEDURES

Detailed cleaning procedures are included in the "Instruction" manual for the appropriate model.

## TOOLS

### Standard

Standard set of hand tools.

VOM with A.C. current tester

(Any quality VOM with a sensitivity of at least 20,000 ohms per volt can be used).

### Special

Temperature tester (thermocouple type).

Manometer

# REMOVAL AND REPLACEMENT OF PARTS

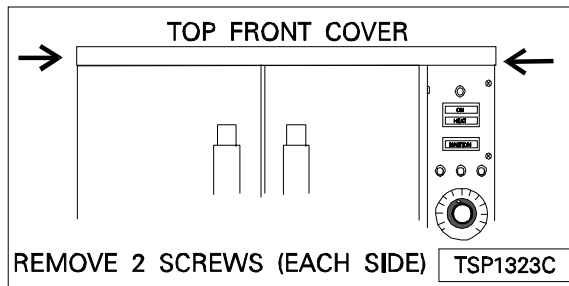
## COVERS AND PANELS

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

**WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

### Top Front Cover

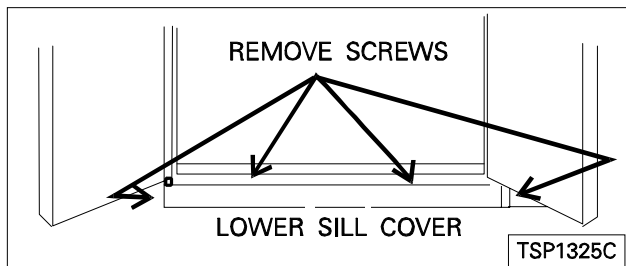
1. The top front cover is secured with (4) four screws, two on each side of cover. Remove these screws then remove the cover from the oven.



2. Reverse the procedure to install.

### Lower Sill Cover

1. Open the doors and remove the 2 screws from the top of the lower sill cover.
2. Remove the screw on each end of the lower sill cover.



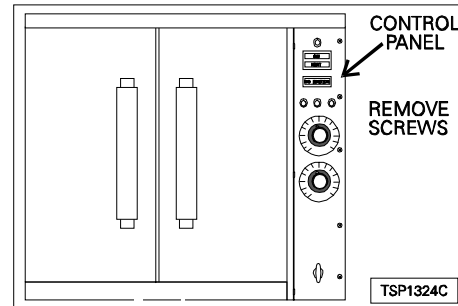
3. Reverse the procedure to install.

### Control Panel

1. Remove the manual gas valve knob.
2. Remove the screws which secure the control panel and pull the panel away from the oven.
3. Unplug the lead wires to the control panel components.

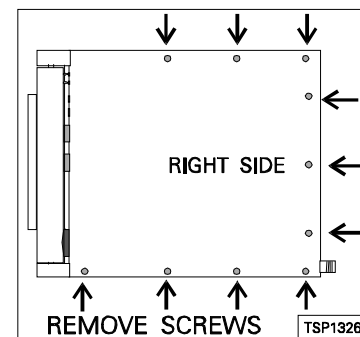
**NOTE:** On the GCO4S, the thermostat must be removed from the control panel before the control panel can be removed.

4. Reverse the procedure to install.



### Right Side Panel

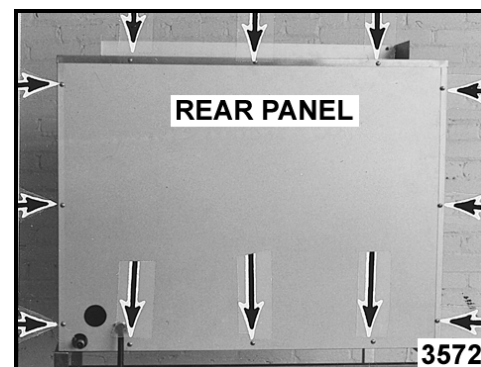
1. Remove the screws which secure the right side of the control panel.
2. Remove the remaining screws securing the right side panel.



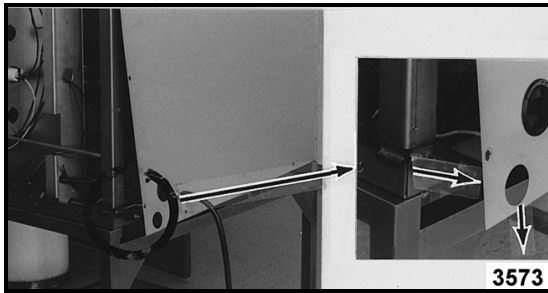
3. Pull the right side panel out at the bottom then down to remove.
4. Reverse the procedure to install.

### Rear Panel

1. Disconnect the gas line at rear of oven.
2. Move unit out to a point where the rear panel is accessible.
3. Remove the screws securing the rear panel.



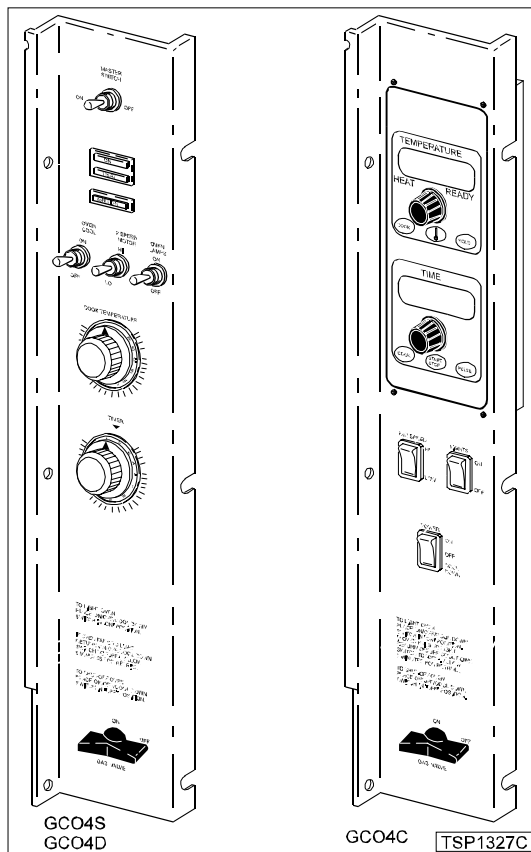
4. While facing the rear of the unit pull the lower left corner out to clear the gas line and down to remove the rear panel.



5. Reverse the procedure to install.

## CONTROL PANEL COMPONENTS

### Removable Components

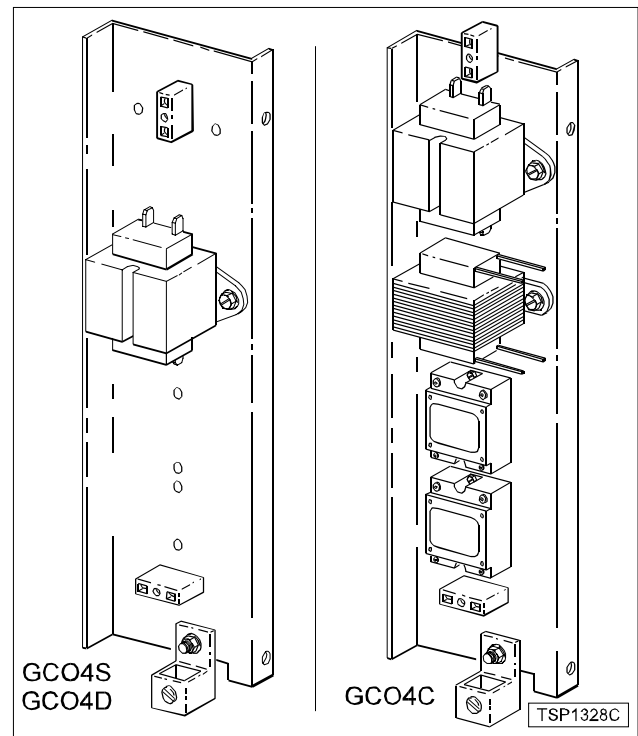


### Procedure

1. **WARNING:** UNPLUG UNIT BEFORE SERVICING.
2. Remove the control panel as outlined under "COVERS AND PANELS".
3. Remove the component.
4. Reverse the procedure to install the new component, then check oven for proper operation.

## COMPONENT PANEL COMPONENTS

### Removable Components



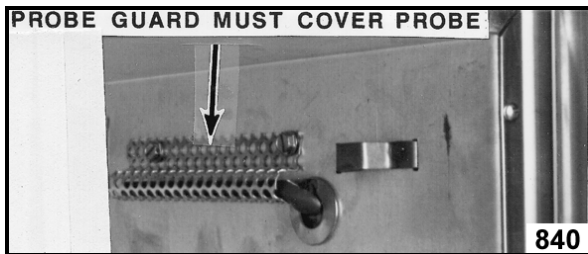
### Procedure

1. **WARNING:** UNPLUG UNIT BEFORE SERVICING.
2. Remove the right side panel as outlined under "COVERS AND PANELS".
3. Remove the component panel.
4. Disconnect the wire leads to the components.
5. Remove the components.
6. Reverse the procedure to install the new component and check oven for proper operation.

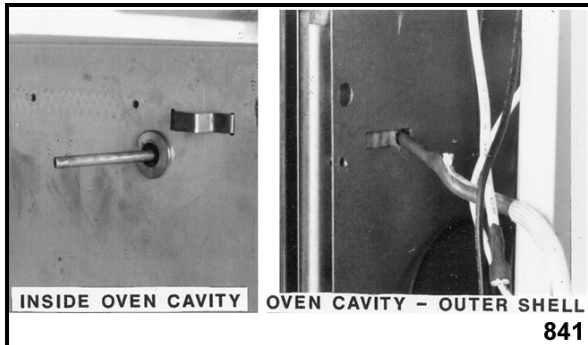
## TEMPERATURE PROBE (GCO4D & GCO4C)

1. **WARNING:** UNPLUG UNIT BEFORE SERVICING.
2. Remove the control panel as outlined under "COVERS AND PANELS".
3. Disconnect the probe leads from the control.
4. Remove the racks and right rack support.
5. Remove the probe guard.

**NOTE:** When installing, the probe should not extend beyond the probe guard.



6. Remove probe by pushing it thru the oven wall and into the control panel area.



**NOTE:** The probe may have to be inserted at an angle. The hole in the inside oven cavity wall may not line up straight with the oven cavity outer shell.

7. Reverse the procedure to install the new probe.
8. Adjust the temperature control as outlined under "TEMPERATURE CONTROL CALIBRATION" in "SERVICE PROCEDURES AND ADJUSTMENTS".

**NOTE:** For GCO4C and GCO6C ovens, calibrate the electronic control as outlined under "ELECTRONIC CONTROL CALIBRATION" in "SERVICE PROCEDURES AND ADJUSTMENTS".

## THERMOSTAT (GCO4S)

1. **WARNING:** UNPLUG UNIT BEFORE SERVICING.
2. Remove the racks and right rack support.
3. Remove the thermostat knob and mounting screws from the control panel and then remove the control panel.
4. Remove the bulb guard from the oven cavity wall.

**NOTE:** When installing, the bulb should not extend beyond the bulb guard.

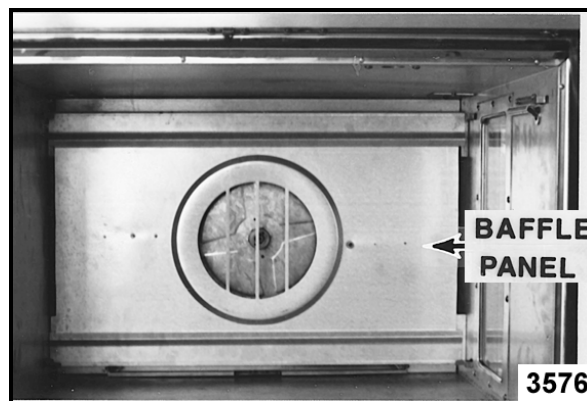
5. Remove the thermostat bulb from the oven cavity by pushing it thru the oven wall and into the control panel area.

**NOTE:** The probe may have to be inserted at an angle. The hole in the inside oven cavity wall may not line up straight with the oven cavity outer shell.

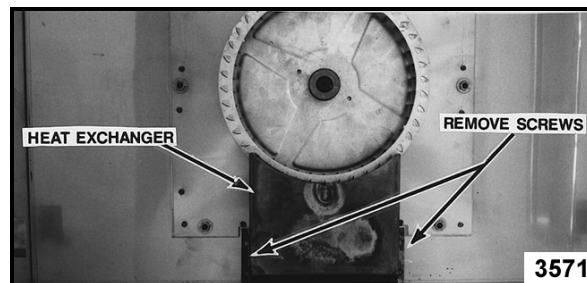
6. Reverse the procedure to install.
7. Adjust the thermostats outlined under "THERMOSTAT CALIBRATION" in "SERVICE PROCEDURES AND ADJUSTMENTS".

## HEAT EXCHANGER

1. **WARNING:** UNPLUG UNIT BEFORE SERVICING.
2. **WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.
3. Remove racks and rack supports.
4. Remove baffle panel by lifting up and out.



5. Remove heat exchanger.



6. Reverse the procedure to install the new heat exchanger.

## IGNITER ELECTRODES/BURNER ASSEMBLY

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

**WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

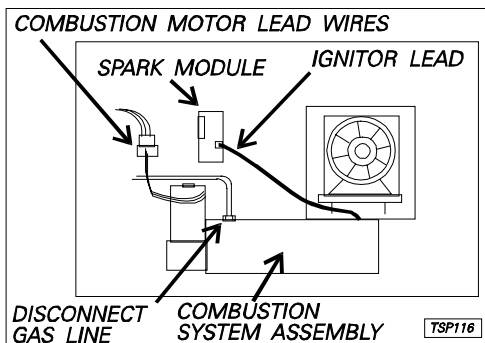
### Right Side and Rear of Oven Accessible

1. Disconnect the gas line and make the rear panel accessible.
2. Remove the rear panel as outlined under "COVERS AND PANELS".
3. Disconnect the lead wires to the combustion motor.
4. Disconnect the igniter lead at the ignition board.

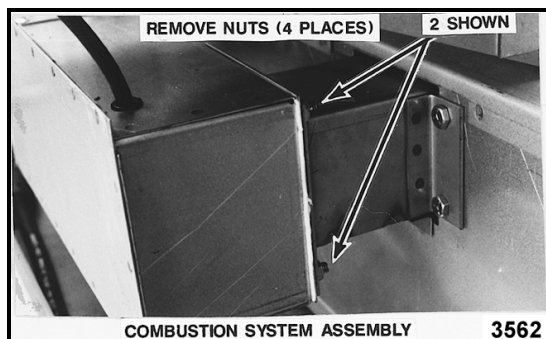
**WARNING:** ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

- A. CHECK ALL JOINTS PRIOR TO GAS VALVE (SOLENOID) BEFORE LIGHTING UNIT.
- B. CHECK ALL JOINTS BEYOND GAS VALVE (SOLENOID) AFTER UNIT IS LIT.

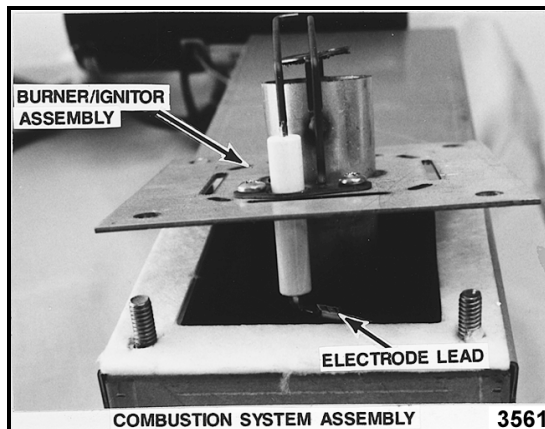
5. Disconnect the gas line at the combustion system assembly.



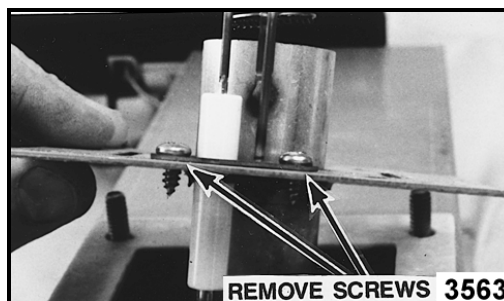
6. Remove the combustion system assembly which is secured by four screws.



7. Pull burner/igniter assembly from the combustion system assembly. Disconnect the lead wire to the electrode when it becomes accessible.

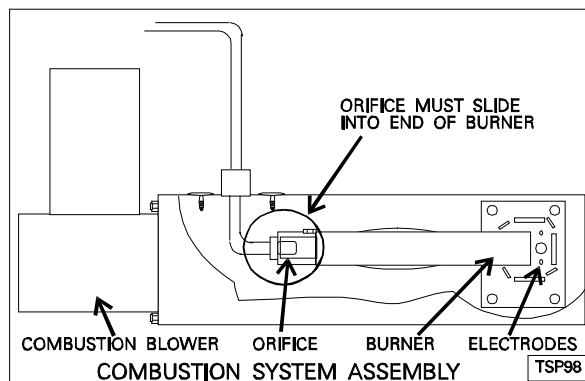


8. Remove the screws and remove igniter assembly from the burner.



9. Remove the combustion motor from the combustion system assembly to assure proper alignment of the burner and orifice.

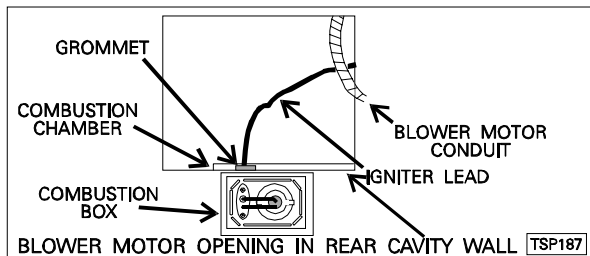
**NOTE:** When installing igniter/burner assembly be certain the hole in rear of burner assembly slides over orifice.



10. Reverse the procedure to assemble and check the oven for proper operation.

## Front Service

1. Follow steps 1 thru 5 and 9 as outlined under "BLOWER AND/OR BLOWER MOTOR". Set the motor and mounting plate assembly on the right side of the oven cavity.
2. Remove the mounting screws from the electrode by accessing them through the combustion box.
3. Remove the electrode lead grommet from the combustion chamber.

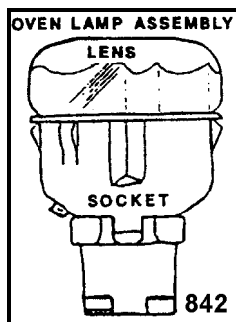


4. Pull the electrode from the burner while feeding the electrode lead through the hole.
5. When the electrode lead connection to the electrode is where it can be reached, remove it from the end of the electrode.
6. Reverse the procedure to install.

## INTERIOR LIGHTS

### Lens

1. Remove the racks and the right rack support.
2. The lens is threaded and can be removed by turning counterclockwise.

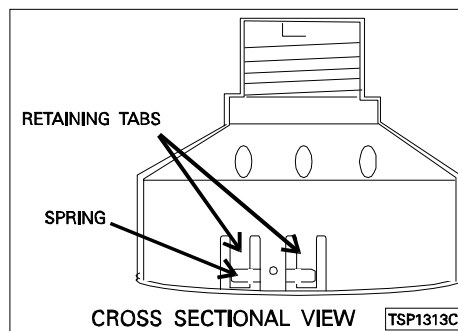


3. Replace the bulb then reverse the procedure to install.

### Lamp Assembly

**WARNING: UNPLUG UNIT BEFORE SERVICING.**

1. Remove the lens and bulb.
2. Remove the springs from the retaining tabs (2 places) on the socket.
3. Pull the socket from the oven far enough to disconnect the lead wires.



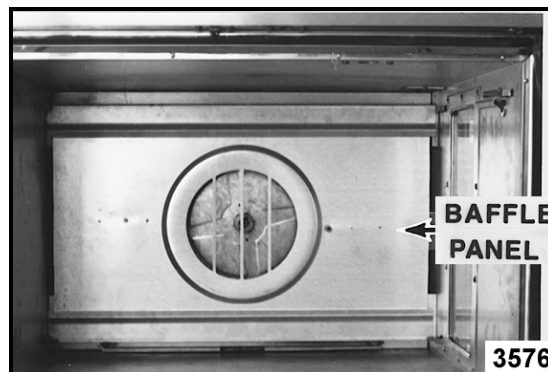
4. Remove the socket from the oven.
5. Attach the lead wires to the replacement socket.
6. Insert the socket into the hole in the oven and push until the socket is held in place by the retaining tabs.
7. Install the light bulb and lens.
8. Check for proper operation.

## BLOWER AND/OR BLOWER MOTOR

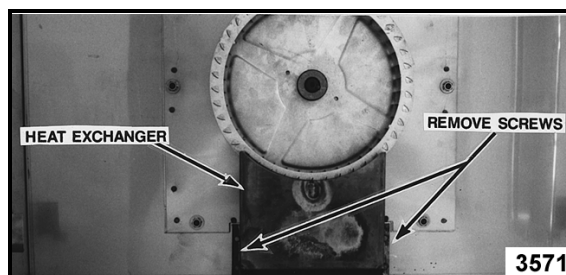
**WARNING: UNPLUG UNIT BEFORE SERVICING.**

**WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.**

1. Remove racks and rack supports.
2. Remove baffle panel by lifting up and out.



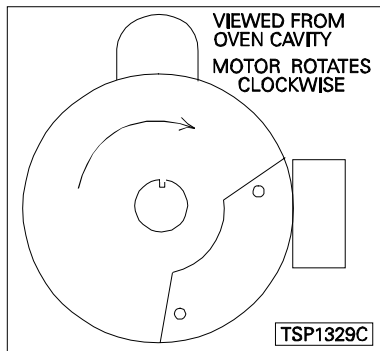
3. Remove heat exchanger.



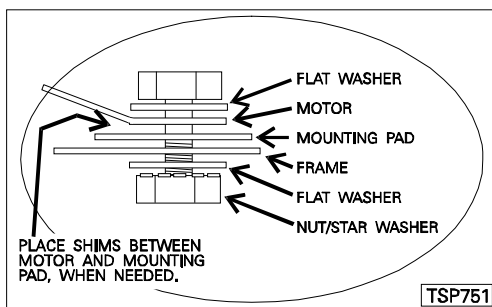
4. Loosen set screw on blower hub.

5. Using a bearing puller, remove blower from motor shaft.
6. If the blower only is to be replaced, reverse procedure to install and check blower to be parallel with the motor mounting plate as outlined under "BLOWER ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS". If the motor is to be replaced, continue procedure.
7. Remove the nuts that secure the motor mounting plate to the rear wall.
8. Lay a piece of cardboard on the bottom of the oven cavity to protect it.
9. Pull the motor assembly into the oven cavity and lay it on the cardboard.
10. Disconnect the lead wires at the motor and remove the conduit.

**NOTE:** Check data plate on motor for wiring schematic. The motor must rotate clockwise viewed from the shaft end.



11. Remove motor mounting hardware and remove the motor from the mounting plate.



12. Position the replacement motor on the motor mounting plate and install mounting bolts and washers. DO NOT tighten mounting bolts.
13. With key in place slide blower onto motor shaft until hub is flush with end of shaft. Tighten set screw.
14. Adjust motor position as outlined under "BLOWER ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".
15. Place motor mounting plate in position and secure with the nuts and washers.

16. Install heat exchanger.

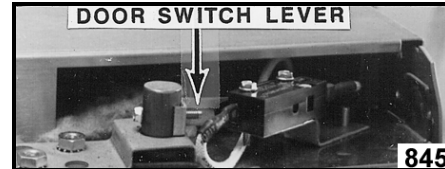
**CAUTION:** Check between blower and heat exchanger, they can not make contact.

17. Install baffle panel, rack guides and racks.

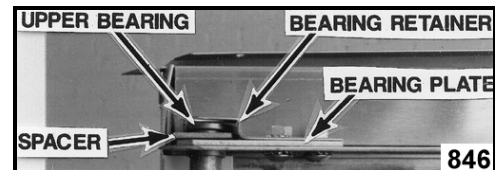
## OVEN DOORS

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

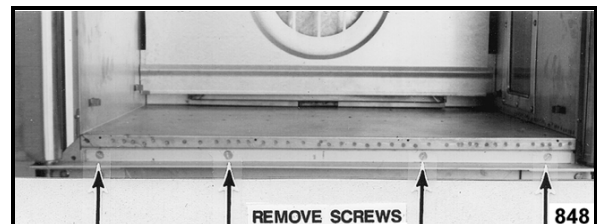
1. Remove the top front cover and lower sill cover as outlined under "COVERS AND PANELS".
2. Remove the door switch lever.



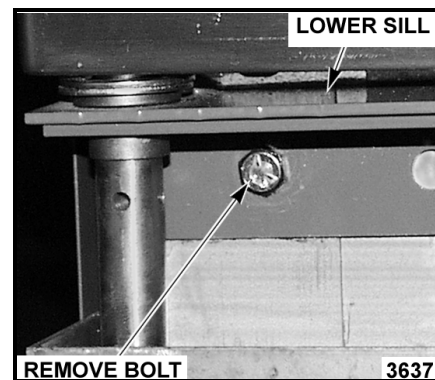
3. Remove the top bearing retainers and top bearings.



4. Remove the lower door seal strip.



5. Remove the lower sill bolts located near the lower door shaft.

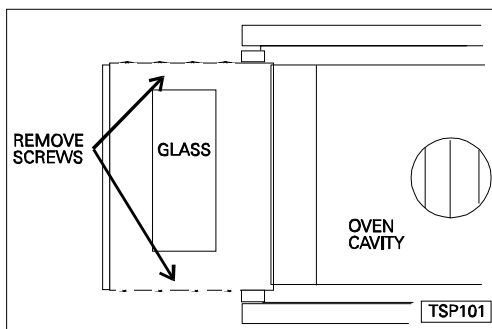


6. Remove the counter-sunk screws from the lower sill. The door assembly will drop down and rest on the bottom of the oven.
7. Lift up on the door assembly until the bottom of the door shafts will clear the bottom of the oven.
8. Pull out on bottom of the door assembly.
9. Allow the door assembly to slide down and clear the top of the door rods from the upper sill.
10. Lay the door assembly on a flat cushioned surface to remove the door from the lower sill.
11. Reverse procedure to install door assembly and check for proper adjustment as outlined under "DOOR ADJUSTMENT" and "DOOR SWITCH ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".

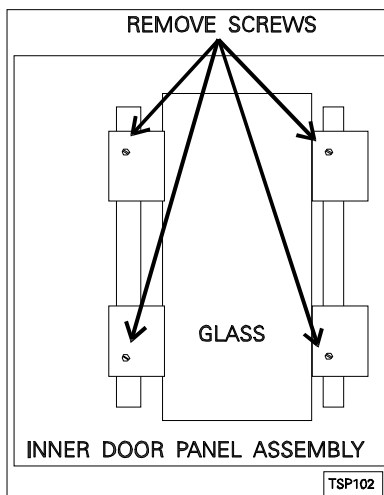
## DOOR WINDOW

**WARNING: UNPLUG UNIT BEFORE SERVICING.**

1. Remove the screws which secure the inner and outer door panels to the door frame.



2. Remove the inner door panel and window assembly.
3. Remove the screws and lift the window assembly out.



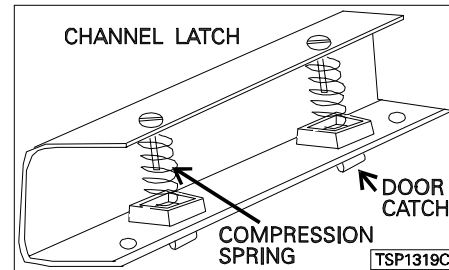
4. Reverse the procedure to install the new window.

## DOOR CATCH

**WARNING: UNPLUG UNIT BEFORE SERVICING.**

### Channel Latch

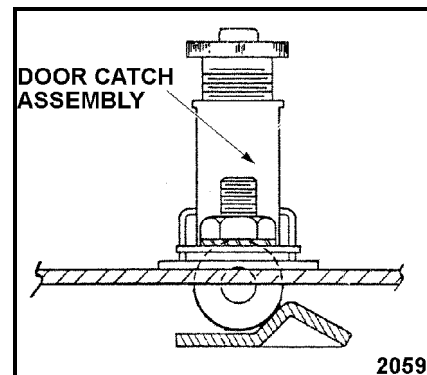
1. Remove the top front cover as outlined under "COVERS AND PANELS".
2. Remove the channel latch assembly from the top front rail.



3. Replace the necessary components.
4. Reverse procedure to install.

### Roller Catch

1. Remove the top front cover as outlined under "COVERS AND PANELS".



2. Remove the screws that secure the roller catch
3. Reverse procedure to install.
4. Adjust the roller catch as outlined under "DOOR CATCH (ROLLER) ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".

## SPARK MODULE

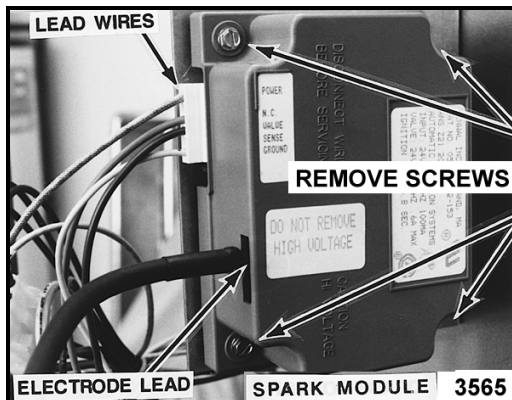
**WARNING: UNPLUG UNIT BEFORE SERVICING.**

**WARNING: SHUT OFF THE GAS BEFORE SERVICING THE UNIT.**

1. Make the rear of the oven accessible and remove the rear panel as outlined under "COVERS AND PANELS".

**NOTE:** If the rear of the oven is not easily accessible, follow steps 1 thru 5 and 9 as outlined under "BLOWER AND/OR BLOWER MOTOR". Set the motor and mounting plate assembly on the right side of the oven cavity.

2. Disconnect the lead wires and igniter lead at the spark module.
3. Remove the spark module.

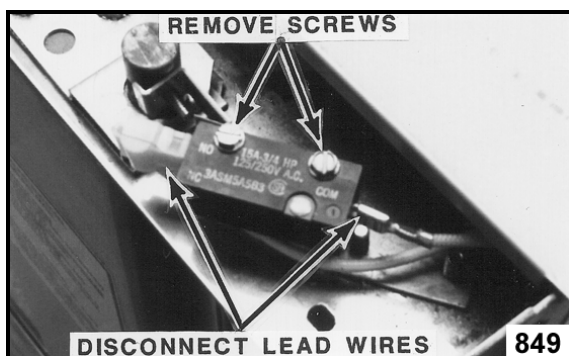


4. Reverse the procedure to install the new spark module.

## DOOR SWITCH

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

1. Remove the top front cover as outlined under "COVERS AND PANELS".
2. Disconnect the leads to the door switch.
3. Remove the switch.



4. Reverse the procedure to install the new switch.
5. Adjust the door switch as outlined under "DOOR SWITCH ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".

## ORIFICE

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

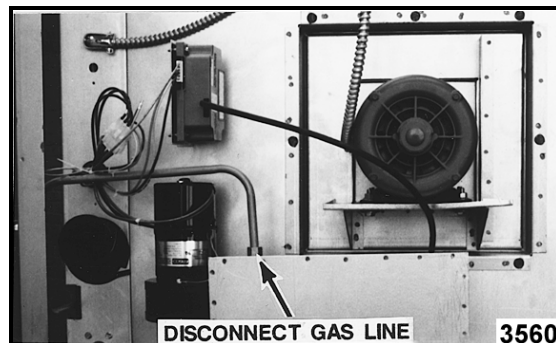
**WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

### Right Side and Rear of Oven Accessible

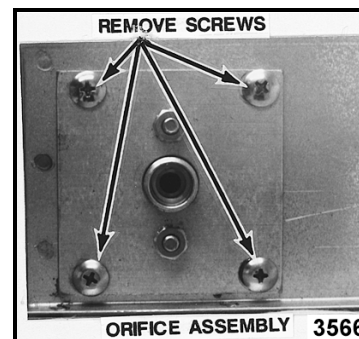
1. Make the rear of the oven accessible and remove the rear panel as outlined under "COVERS AND PANELS". If not, proceed to "FRONT SERVICEABILITY".
2. Remove the combustion blower as outlined under "COMBUSTION BLOWER".
3. Disconnect the gas line at the orifice assembly.

**WARNING:** ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

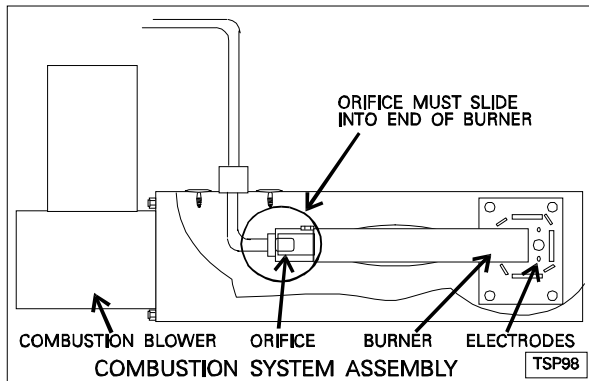
- A. CHECK ALL JOINTS PRIOR TO GAS VALVE (SOLENOID) BEFORE LIGHTING UNIT.
- B. CHECK ALL JOINTS BEYOND GAS VALVE (SOLENOID) AFTER UNIT IS LIT.



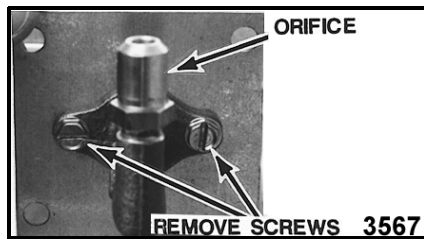
4. Remove the orifice assembly from the combustion system assembly.



**NOTE:** When installing orifice, be certain the orifice slides into the hole in the rear of the burner / igniter assembly in rear of burner assembly.



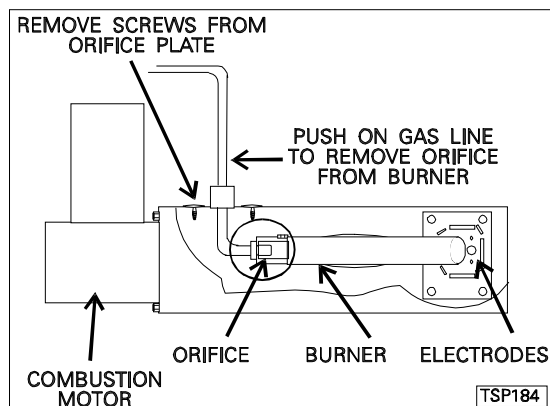
5. Remove the orifice from the orifice mounting plate.



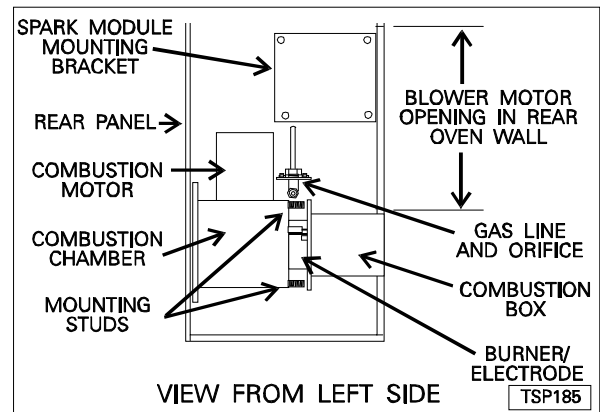
6. Reverse the procedure to install the new orifice.

#### Front Service

1. Follow steps 1 thru 5 and 9 as outlined under "BLOWER AND/OR BLOWER MOTOR". Set the motor and mounting plate assembly on the right side of the oven cavity.
2. Remove the screws from the orifice mounting plate. Push the gas line toward the combustion motor to disengage the orifice from the burner.



3. Remove the nuts from the studs that secure the combustion chamber to the oven.
4. Push the combustion chamber toward the rear panel of the oven until the combustion chamber mounting studs clear the combustion box. The weight of the combustion blower will pull the combustion chamber down. The gas line and the orifice can now be removed from the combustion chamber.



5. Replace the orifice on the mounting plate.
6. TEST THE GAS CONNECTION BY THE FOLLOWING METHOD **ONLY** WHEN SERVICING FROM THE FRONT.
  - A. Disconnect the electrode lead at the spark module.

**NOTE:** Mark the location of the electrode lead on the spark module for ease in installation.

- B. Disable convection blower motor by removing the control panel and disconnecting the lead wires to the motor speed switch. Tape the ends of the wires.
- C. Tape the door switch actuator in the closed position.
- D. Apply a water and soap solution to compression fitting and orifice.
- E. Set the thermostat to a temperature higher than the oven temperature and turn the oven on.
- F. Working through the combustion blower motor opening, place your thumb over the end of the orifice.
- G. Observe the connections for leaks. The oven will attempt to light 3 times and then shut down on lock out.
  - 1) If leaks are found, tighten or repair connections and test for leaks again.
  - 2) When no leaks are found, shut the oven off.

7. Re-assemble the oven and check for proper operation.

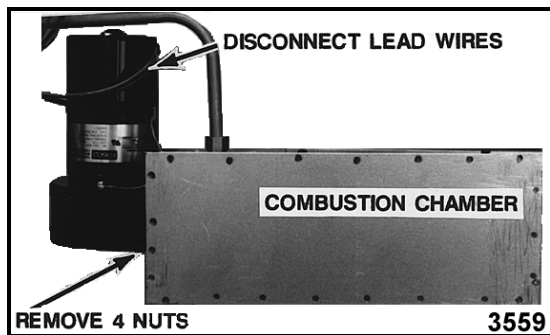
## COMBUSTION BLOWER

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

**WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

### Right Side and Rear of Oven Accessible

1. Disconnect the gas line and make the rear panel accessible.
2. Remove the rear panel as outlined under "COVERS AND PANELS".
3. Disconnect the lead wires to the combustion motor.
4. Remove the blower.

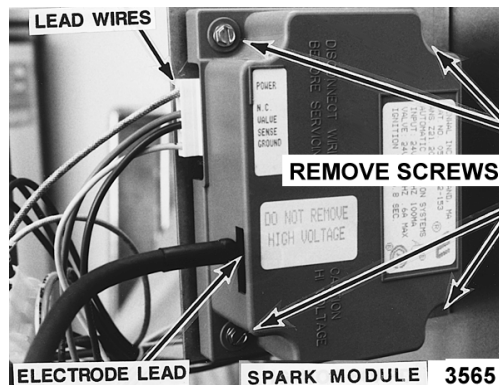


**NOTE:** Be certain gasket is in place and the air restrictor is installed on the new blower.

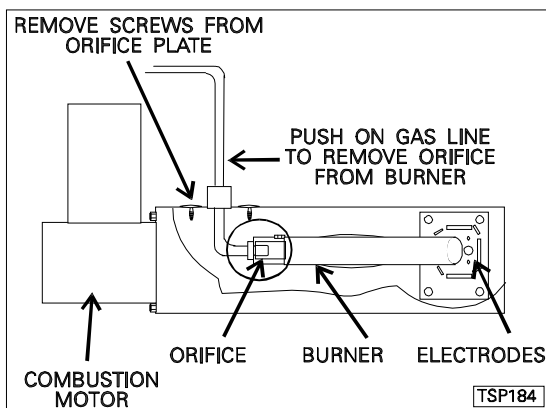


### Front Service

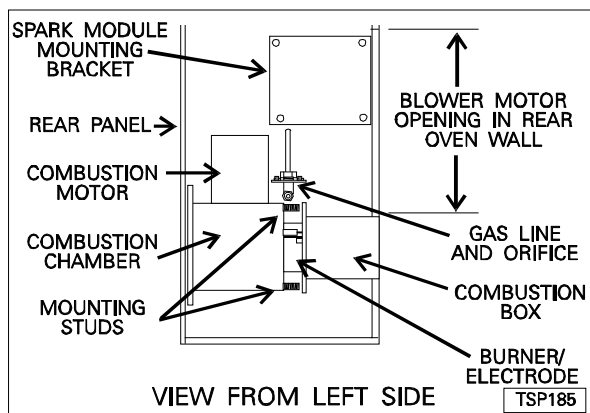
1. Follow steps 1 thru 5 and 9 as outlined under "BLOWER AND/OR BLOWER MOTOR". Set the motor and mounting plate assembly on the right side of the oven cavity.
2. Disconnect the electrode lead and lead wires from the spark module and remove the spark module from its mounting bracket and lay aside.



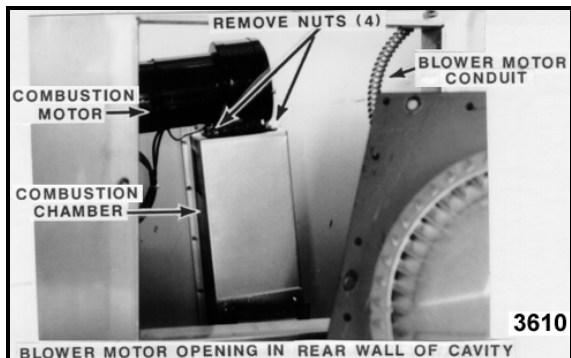
3. Disconnect the lead wires to the combustion motor.
4. Remove the screws from the orifice mounting plate. Push the gas line toward the combustion motor to disengage the orifice from the burner.



5. Remove the nuts from the mounting studs that secure the combustion chamber to the combustion box.
6. Push the combustion chamber toward the rear panel of the oven until the combustion chamber mounting studs clear the combustion box. The weight of the combustion motor will pull the combustion chamber down. The gas line and orifice can now be removed from the combustion chamber.



7. With the combustion motor against the rear panel, rotate the combustion chamber until the combustion motor is accessible.
8. Remove the nuts from the studs that secure the combustion motor.



9. Reverse procedure to install.

## SOLENOID VALVE

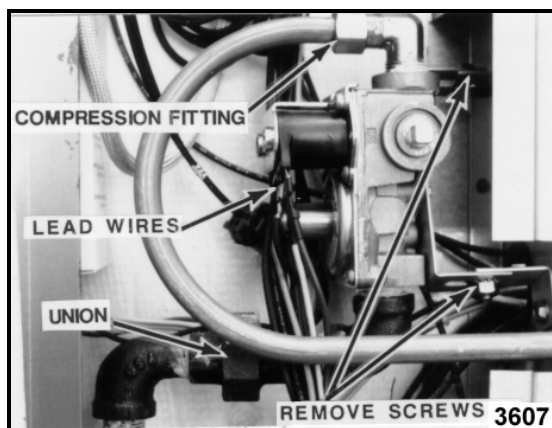
**WARNING:** UNPLUG UNIT BEFORE SERVICING.

**WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

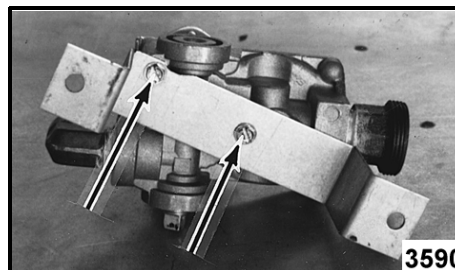
1. Remove the right side panel as outlined under "COVERS AND PANELS".
2. Disconnect the wire leads at the solenoid.

**WARNING:** ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH A SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

- A. CHECK ALL JOINTS PRIOR TO GAS VALVE (SOLENOID) BEFORE LIGHTING UNIT.
- B. CHECK ALL JOINTS BEYOND GAS VALVE (SOLENOID) AFTER UNIT IS LIT.
3. Disconnect the compression fitting.
4. Disconnect the union.



5. Remove the valve and bracket assembly.
6. Remove the bracket from the valve body.

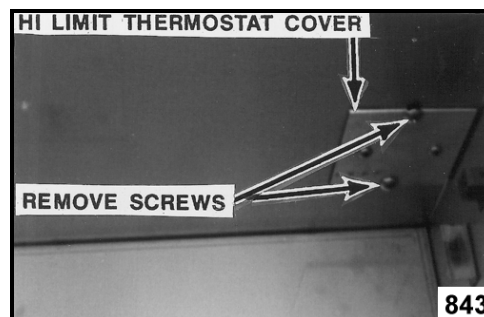


7. Reverse the procedure to install the new valve.
8. Check gas pressure as outlined under "GAS PRESSURE ADJUSTMENT" in "SERVICE PROCEDURES AND ADJUSTMENTS".

## HIGH LIMIT THERMOSTAT

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

1. Remove the racks and right rack support.
2. Remove high limit thermostat cover in top right rear corner of oven cavity.



3. Disconnect lead wires from high limit thermostat.
4. Remove high limit thermostat from cover.
5. Reverse procedure to install.

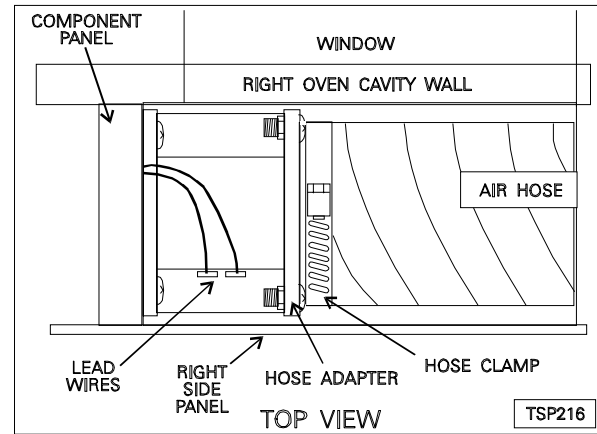
## COOLING FAN

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

1. Remove the right side panel as outlined under "COVERS AND PANELS".
2. Disconnect the lead wires to the fan motor.

**NOTE:** Replacement fans may not have terminals. Remove the terminals from the oven lead wires and use wire nuts to connect the lead wires.

3. Remove the screws holding the fan to the oven frame.
4. Remove the fan motor from the hose adapter.
5. Reverse the procedure to assemble.



**NOTE:** Install the motor so air is circulated from the rear of the oven to the control components.

## SERVICE PROCEDURES AND ADJUSTMENTS

**WARNING:** CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TEST OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

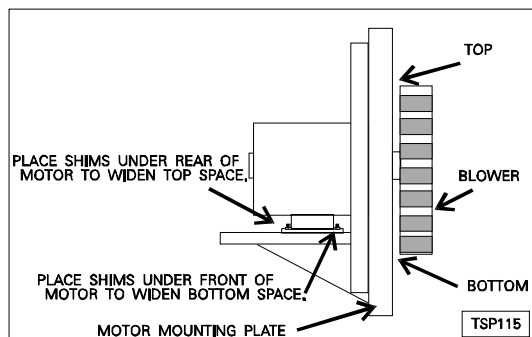
### BLOWER ADJUSTMENT

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

**WARNING:** SHUT OFF THE GAS BEFORE SERVICING THE UNIT.

1. Remove the blower motor and mounting assembly by following steps 1 thru 5 and 9 as outlined under "BLOWER AND/OR BLOWER MOTOR" in "REMOVAL AND REPLACEMENT OF PARTS".
2. Loosen the motor mounting bolts.
3. Adjust the motor position until the blower is parallel to and 1/4 inch away from the motor mounting plate. Tighten motor mounting bolts.

**NOTE:** If the top and bottom of the blower are not parallel to the motor mounting plate, shims should be placed between the motor and the rubber mounting pad.



4. Reverse the procedure to install.

**CAUTION:** Ensure that the blower does not hit the heat exchanger.

### TEMPERATURE CONTROL CALIBRATION (GCO4D & GCO6D)

1. Place a thermocouple in the geometric center of the oven cavity.
2. Turn the master switch ON.
3. Set the temperature control to 350°F.
4. Allow the oven to cycle until the oven temperature stabilizes.
5. Record the temperature at which the HEAT LAMP goes off and on for at least two complete heating cycles.
6. Calculate the differential by subtracting the temperature indicated when the lamp comes on from the temperature indicated when the lamp goes out.

$$\text{Differential} = \text{Heat lamp OFF} - \text{Heat lamp ON}$$

Example: 360° (lamp off) - 340° (lamp on) = 20°

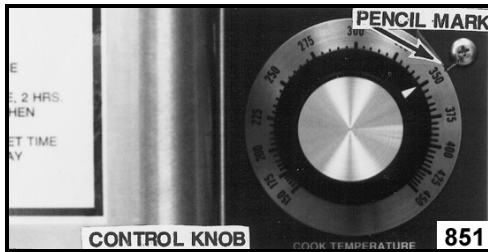
- A. The differential calculated should be equal to or less than 20° F.
  - B. If the differential is more than 20° F, the temperature control circuit is malfunctioning.
7. Calculate the average temperature by adding the temperature indicated when the lamp goes out to the temperature indicated when the lamp comes on and dividing this answer by 2.

$[Temp. (Lamp\ off) + Temp. (lamp\ on)] \div 2 = Average\ Temp.$

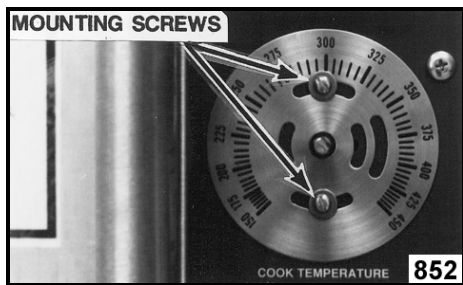
Example:  $360^{\circ} + 340^{\circ} \div 2 = 350^{\circ}$

8. If the average temperature differs more than 10°F from the dial settings:

- A. Pencil mark the knob pointer position as a reference point on the control panel next to the dial plate.
- B. Remove the temperature control knob.



- C. Loosen the two dial plate mounting screws and the temperature control mounting nut. Loosen only enough to turn the dial plate.



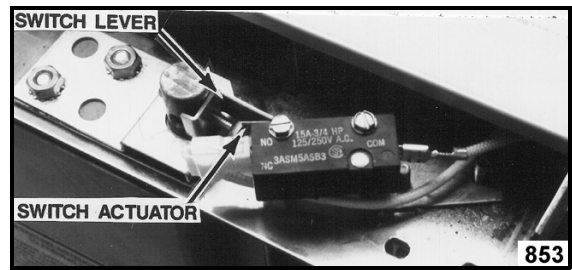
- D. Rotate the dial plate until the average temperature calculated is in line with the pencil mark and tighten the screws.
- E. If the above adjustment cannot be obtained, check temperature probe and temperature control board as outlined under "TESTING TEMPERATURE CONTROL BOARD".

## DOOR SWITCH ADJUSTMENT

If the blower motor continues to run after the right door has been opened between 1 and 1½ inches, perform the following procedure.

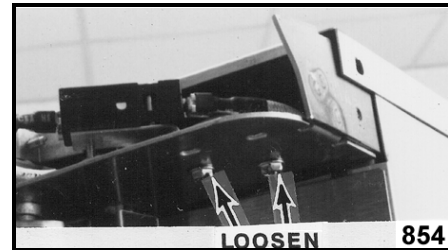
**WARNING:** UNPLUG UNIT BEFORE SERVICING.

1. Remove the upper front cover as outlined under "COVERS AND PANELS".
2. The switch actuator should be operated by the switch lever when the right door is between 1" and 1½" from being closed.



3. If adjustment is necessary, use the following procedures.

- A. Loosen the two switch bracket mounting screws.
- B. Adjust the switch bracket to obtain the correct setting as outlined in step 2.



- C. Tighten the two switch bracket mounting screws.

- D. Install the upper front cover.

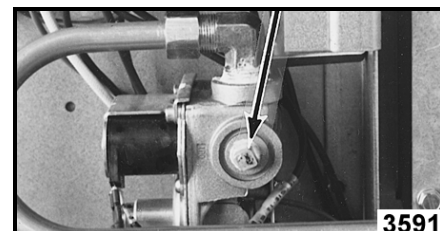
4. Apply power to the oven and check for proper operation.

## GAS PRESSURE ADJUSTMENT

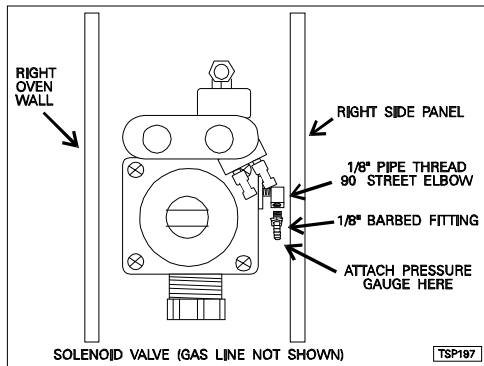
**WARNING:** UNPLUG UNIT BEFORE SERVICING.

**NOTE:** If the right side of the oven is not accessible, the gas pressure can be adjusted from the front. The steps that vary will have an alternative step for front service.

1. Turn gas supply off at manual shutoff valve.
2. Remove the right side panel as outlined under "COVERS AND PANELS" in "REMOVAL AND REPLACEMENT OF PARTS". For front service remove the control panel, but the lead wires must remain connected to operate the oven later in the procedure.
3. Remove the plug from the gas valve test port.



4. Install the manometer. For front service, install an 1/8", pipe thread, 90° street elbow into the test port.



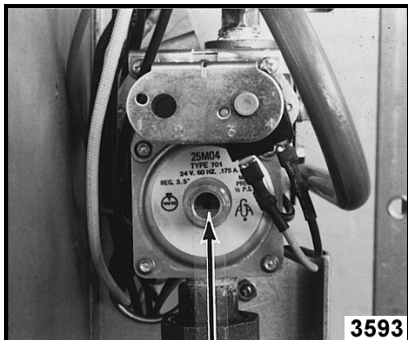
5. Remove adjustment port cover cap from the gas valve.



6. Turn the gas on to the oven.

**WARNING:** THE FOLLOWING STEPS REQUIRE POWER TO BE APPLIED TO THE UNIT DURING TEST. USE EXTREME CAUTION AT ALL TIMES.

7. Plug the unit in and turn the power switch "ON".
8. Set the temperature control to its highest setting and allow burner to ignite. The burner must be lit during test and adjustment.
9. Turn the set screw to obtain the proper gas pressure.



GAS TYPE	SETTING AT OUTPUT OF SOLENOID
Natural	3.5 inches W.C.
Propane	10 inches W.C.

**NOTE:** If input pressure to the valve is below 4.0 (Natural) or 10.5 (Propane), the desired output cannot be obtained and the oven will operate at a lower BTU.

## TEMPERATURE CONTROL BOARD TEST (GCO4D)

**WARNING:** UNPLUG UNIT BEFORE SERVICING.

1. Remove the screws from the control panel. Pull control panel away from the oven to gain access to control wiring.
2. Place a thermocouple in the geometric center of the oven cavity. Connect thermocouple to hand held thermometer. Oven temperature must be below 450°F.
3. Set the temperature control to the maximum temperature.
4. Re-apply power to the oven and turn the master switch to ON.
5. Check for 120VAC output across pin 9 to pin 6 on the temperature control board.
  - A. If correct, proceed to step 7.
  - B. If incorrect, go to step 6.
6. Check for 120VAC input across pin 7 to 9 and pin 8 to 9 on the Temperature Control Board.
  - A. If correct, proceed to step 7.
  - B. If incorrect, problem is not with the Temperature Control. Return to Troubleshooting Guide.
7. Turn the temperature control to the minimum setting.

**NOTE:** Oven temperature must be above 300° F.

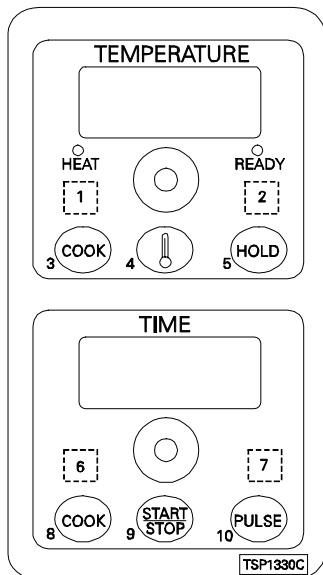
8. Check for zero (0) Volts from pin 9 to pin 6 on the Temperature Control.
  - A. If correct, the Temperature checks out correctly. Return to Troubleshooting Guide.
  - B. If incorrect, replace Temperature Control Board.

## COMPUTER CONTROL (GCO4C & GCO6C)

**SPECIAL KEY FUNCTIONS** - To activate these functions press the specified keys while turning the oven on. You can not toggle between functions. Each function has to be entered from the off position.

**NOTE:** There are four hidden keys on the control. See diagram following the table.

HOLD KEYS	FUNCTION
1 & 3	Calibration Mode
4 & 9	Change between °C & °F
6 & 8	Display test



### Software Version

The software version can be displayed by pushing hidden key 6, then hidden key 7. This feature was added approximately 2/28/97. The controls prior to the date will not display the version.

VERSION	CHANGE	APPROX. RELEASE DATE
1.23	Error code E-06 added.	2/28/97
3.00	Functions the same as ver 1.23, but has different internal components	1/15/98

### CALIBRATE OVEN - Perform Calibration at 350°F

- Place a thermocouple near the geometric center of the oven cavity.
- Cycle oven until the cavity temperature stabilizes. (usually 3 cycles)
- Turn the oven off.
- Enter the calibration mode.
- Compare the set temperature to the measured temperature.
- Adjust the temperature on the display to match the measured temperature.
- Press key 3 to store the calibration information.

### DISPLAY TEST

The control will cycle through a continuous test until the oven is turned off. Each segment of the displays will be lit in sequence, each LED in order and then each digit will light.

### ERROR CODES

CODES	CONDITIONS
E-01	High Limit Error - Check open probe.
E-02	Low Limit Error - check for 6 VAC from transformer. Check control pins 1-2 for 12 VAC & pins 2-3 for 6 VAC.
E-03	Control compartment ambient temperature is above 215°F
E-04	Control compartment ambient temperature is below 32°F
E-05	Ignition failure
E-06	Cavity temperature thermocouple open.

## THERMOSTAT CALIBRATION (GCO4S)

- Place a thermocouple in the geometric center of the oven cavity.
- Set the thermostat to 350°F.
- Allow the oven temperature to stabilize (normally 3 cycles).
- Record the temperature when the thermostat cycles "on" and "off" for at least three cycles.
- Calculate the differential by subtracting the temperature indicated when the heat light comes on from the temperature indicated when the heat light goes out.

$$\text{Differential} = \text{Heat lamp OFF} - \text{Heat lamp ON}$$

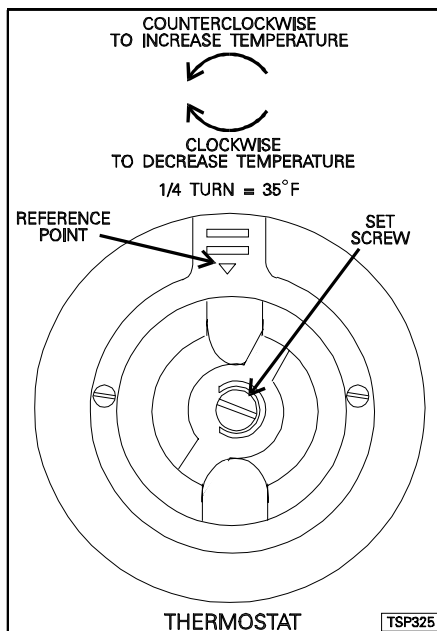
$$\text{Example: } 360^\circ (\text{lamp off}) - 340^\circ (\text{lamp on}) = 20^\circ$$

- A. The differential calculated should be equal to or less than 30°F.
  - B. If the differential is greater than 30°F, replace the thermostat.
6. Calculate the average temperature by adding the temperature indicated when the heat light goes out to the temperature indicated when the heat light comes on and dividing this answer by 2.

$[Temp. (Lamp\ off) + Temp. (lamp\ on) \div 2 = Average\ Temp.]$

Example:  $360^{\circ} + 340^{\circ} \div 2 = 350^{\circ}$

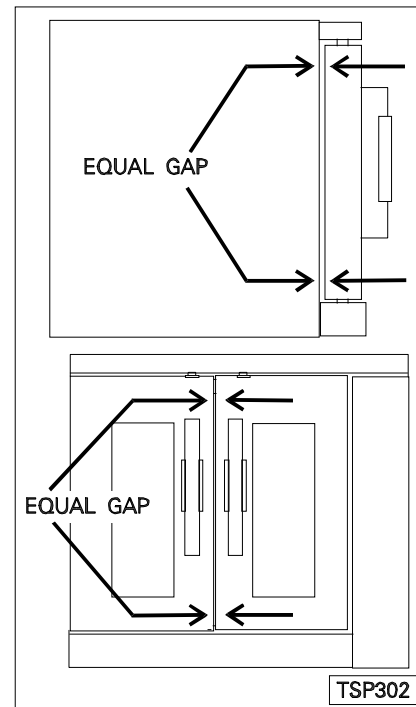
- A. If the average temperature is  $\pm 10^{\circ}F$  of the set temperature, the thermostat is calibrated.
- B. If the average temperature is not  $\pm 10^{\circ}F$  of the set temperature:
  - 1) Remove the thermostat knob.
  - 2) Turn the set screw clockwise to decrease temperature or counterclockwise to increase temperature.
    - a.  $\frac{1}{4}$  turn =  $35^{\circ}F$ .
  - 3) Seal the screw with finger nail polish.
7. Replace the knob and repeat steps 4 through 6 until the average temperature is the same as the set temperature.
8. If the thermostat can not be calibrated, replace the thermostat as outlined under "THERMOSTAT" in "REMOVAL AND REPLACEMENT OF PARTS."



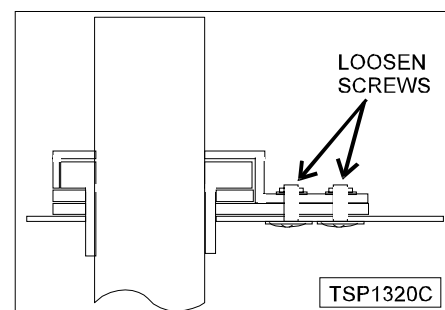
## DOOR ADJUSTMENT

**WARNING: UNPLUG UNIT BEFORE SERVICING.**

1. Check the doors to make sure they have an equal gap between them and that the vertical edge of the door is parallel to the vertical door seal. If the doors are not positioned in this manner, adjust the doors into the described position.



2. Remove the top front cover.
3. Loosen the screws that secure the upper door bearings and related hardware.



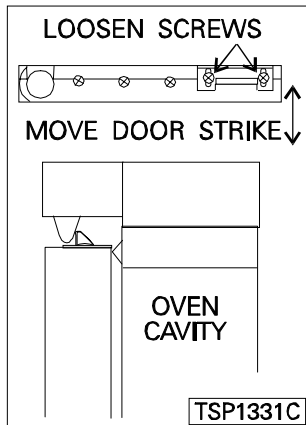
4. Move the door to the proper position and tighten the screws that secure the upper door bearing hardware.

## DOOR STRIKE ADJUSTMENT

**WARNING: UNPLUG UNIT BEFORE SERVICING.**

### Channel Latch

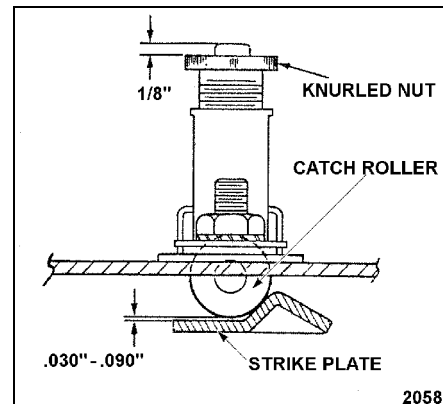
1. Loosen the screws that secure the door strike and position the door strike so the door closes tightly against the seal strip when the door latch is positioned behind the door strike.



### Roller Latch

1. Remove the top front cover.
2. Inspect the strike plate for straightness, replace if bent.
3. Inspect the catch, replace if it is damaged.
4. Check for proper door alignment.
  - A. The doors should be centered in the cavity opening and parallel to the top and bottom of the oven.
  - B. If adjustment is required, remove the doors and shim the bottom hinge pins.
5. Lubricate the catch, around the spring with a high temperature lubricant.
6. Turn the knurled nut to expose approximately 1/8" of the center stud.
7. Close the doors and observe the position of the strike plate in relation to the catch roller.
8. Adjust the strike plate by sliding it back and forth on its slotted mounting holes until the roller rests upon the angular surface of the strike plate and is .030" to .090" above the flat surface of the strike plate.
  - A. If proper adjustment cannot be achieved, it will be necessary to add shims beneath the strike plate. DO NOT BEND THE STRIKE PLATE.

9. Slowly close the oven door while watching the catch spring. If the spring bottoms out, back the knurled nut off a maximum of two turns, then try closing the door again.
  - A. If the spring still bottoms out, it will be necessary to remove shims from beneath the door and readjust.
10. The oven door should open with a force of 8 to 25 pounds when pulled at the handle.
  - A. If the door pull is too light, the knurled nut can be tightened a maximum of two turns (providing the spring does not bottom out) to increase tension on the roller.
  - B. If the door pull is too hard, loosen the knurled nut to decrease the tension on the roller.



## TEMPERATURE PROBE TEST (GCO4D)

**WARNING: UNPLUG UNIT BEFORE SERVICING.**

1. Remove the screws from the control panel. Pull control panel away from the oven to gain access to control wiring.
2. Place a shielded thermocouple in the geometric center of the oven cavity and determine the temperature of the oven cavity.
3. Remove the probe lead wires from the electronic control.
4. Test the probe with an ohmmeter.

TEMP °F	Ω ±10%
77	90000
240	4077
260	3016
280	2266
300	1726
320	1332
340	1041

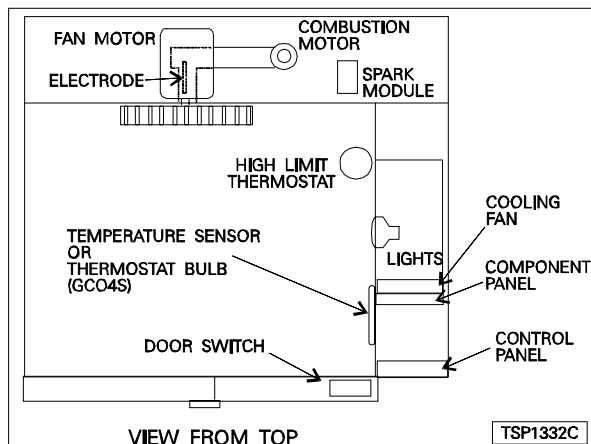
TEMP °F	Ω ±10%
360	822
380	656
400	529
425	424
450	334
475	266

# ELECTRICAL OPERATION

## COMPONENT FUNCTION

<b>Master Switch</b> . . . . .	Controls power to oven controls.
<b>Light Switch</b> . . . . .	Controls lights in oven cavity.
<b>Motor Switch</b> . . . . .	Controls blower motor speed on ovens with two speed motors.
<b>Cool Down Switch</b> . .	Energizes blower motor and prohibits burner from operating.
<b>Door Switch</b> . . . . .	Allows heating of oven, only when the doors are closed.
<b>Centrifugal Switch</b> . .	Switch closes when combustion motor reaches operating speed. Controls power to the spark module.
<b>Blower Motor</b> . . . . .	Operates the oven cavity blower.
<b>Combustion Blower Motor</b> . . . . .	Provides air input to gas burner and operates centrifugal switch.
<b>Transformer</b> . . . . .	Provides 24VAC power to the spark module.
<b>Timer Board</b> . . . . .	Displays the time remaining in the selected period. An audible alarm will sound when the selected time period has expired. The timer is not electrically connected to shut off the oven at the end of the time period.
<b>Temperature Control Board</b> . . . . .	Monitors temperature sensor and regulates the oven temperature by controlling the voltage to the combustion blower motor (D models only).
<b>Spark Module</b> . . . . .	Controls the ignition cycle, gas solenoid and no ignition light.
<b>Igniter</b> . . . . .	Ignites the gas and monitors the flame.
<b>Power On Light</b> . . . .	Lit whenever the master switch is ON.
<b>Heat Light</b> . . . . .	Lit whenever temperature control is calling for heat.
<b>No Ignition Light</b> . . .	Lit during 15 sec. purges and when no flame is detected by flame sensor. It will remain lit if the oven fails to ignite after 3 attempts and remain lit until a power interruption.
<b>Temperature Probe</b> . .	Senses the oven temperature and converts it into a resistance which is monitored by temperature control board.
<b>Filters</b> . . . . .	Reduces voltage spikes thus protecting the electronic components.
<b>High Limit Thermostat</b>	Opens spark module circuit when oven cavity goes above 500°F; auto reset at 450°F.
<b>Solenoid Valve</b> . . . . .	Allows gas to flow to burner.
<b>Cooling Fan</b> . . . . .	Circulates air from rear of oven forward to cool controls.

## COMPONENT LOCATION



## SEQUENCE OF OPERATION (S & D MODELS)

The D model is used in the write-up. For the S models, substitute "thermostat" for "temperature control".

### Cook Cycle

1. Conditions.
  - A. Oven connected to correct supply voltage and is at room temperature.
  - B. Master switch off.
  - C. Door switch closed.
  - D. Manual gas valve on.
  - E. Motor speed switch to desired selection.
  - F. Light switch position has no affect on the function of the Cook Cycle.
  - G. Cooldown switch off.
  - H. High limit thermostat closed.
2. Master switch turned on.
  - A. Cooling fan energized.
  - B. Power lamp energized.
  - C. Power to timer.

**NOTE:** The timer is not connected to the Cook or Cool Down Cycle and **WILL NOT** affect either cycle, but will be powered during both.

- D. Oven lamps will energize if switch is closed.
  - E. Blower motor energized.
  - F. Power to temperature control.
3. Temperature control set to desired temperature.
  - A. Heating lamp energized.
  - B. Combustion blower energized.
  - C. Transformer energized.
4. Centrifugal switch closes when combustion motor reaches operating speed.
  - A. Spark module powered
5. Principle of operation of spark module.

A pre-ignition purge feature provides a 15 second delay period before ignition. During this purge period, the no-ignition light is on and the Combustion Motor clears the combustion chamber of any residual gas. When sparking starts, the gas solenoid is powered.

Sparking will last for up to 6.8 seconds. Once the flame is established, sparking is terminated and the no-ignition light turns off. A flame current of at least 5 microamps DC passing from the igniter sense probe through the flame to ground is required to hold the gas solenoid energized.

If a flame is not sensed during the first ignition attempt, a second purge period and ignition is provided, if a flame is still not sensed a third purge and ignition is introduced. If the flame is still not established, the module will go into lockout and the no-ignition light will be on. One of the following must occur to reset the spark module.

- A. Turn the power switch OFF then back ON.
  - B. Open and close the oven door.
6. Flame is established and oven heats to set temperature.
7. Oven temperature reaches the temperature control dial setting.
  - A. Temperature control removes power to pin 6. All components energized thru pin 6 will de-energize.
    - 1) Combustion motor
    - 2) Transformer
    - 3) Heat Light
    - 4) Spark Module
8. The oven will cycle on the temperature control until cooldown switch is moved to cooldown, master switch turned off or power is removed from the oven.

### Cool Down Cycle

1. Conditions.
  - A. Oven is at set temperature and needs to be cooled down.
  - B. Master switch on.
  - C. Door switch closed.
  - D. Manual gas valve on.
  - E. Motor speed switch to desired selection.
  - F. Light switch position has no affect on the function of the any cycle.
  - G. Cooldown switch off.
  - H. High limit thermostat closed.
2. Cooldown switch turned on.
  - A. Power removed from temperature control.
  - B. Timer remains powered.
  - C. Oven lamps will energize if switch is closed.

**NOTE:** The timer is not connected to the Cook or Cool Down Cycle and **WILL NOT** affect either cycle, but will be powered during both.

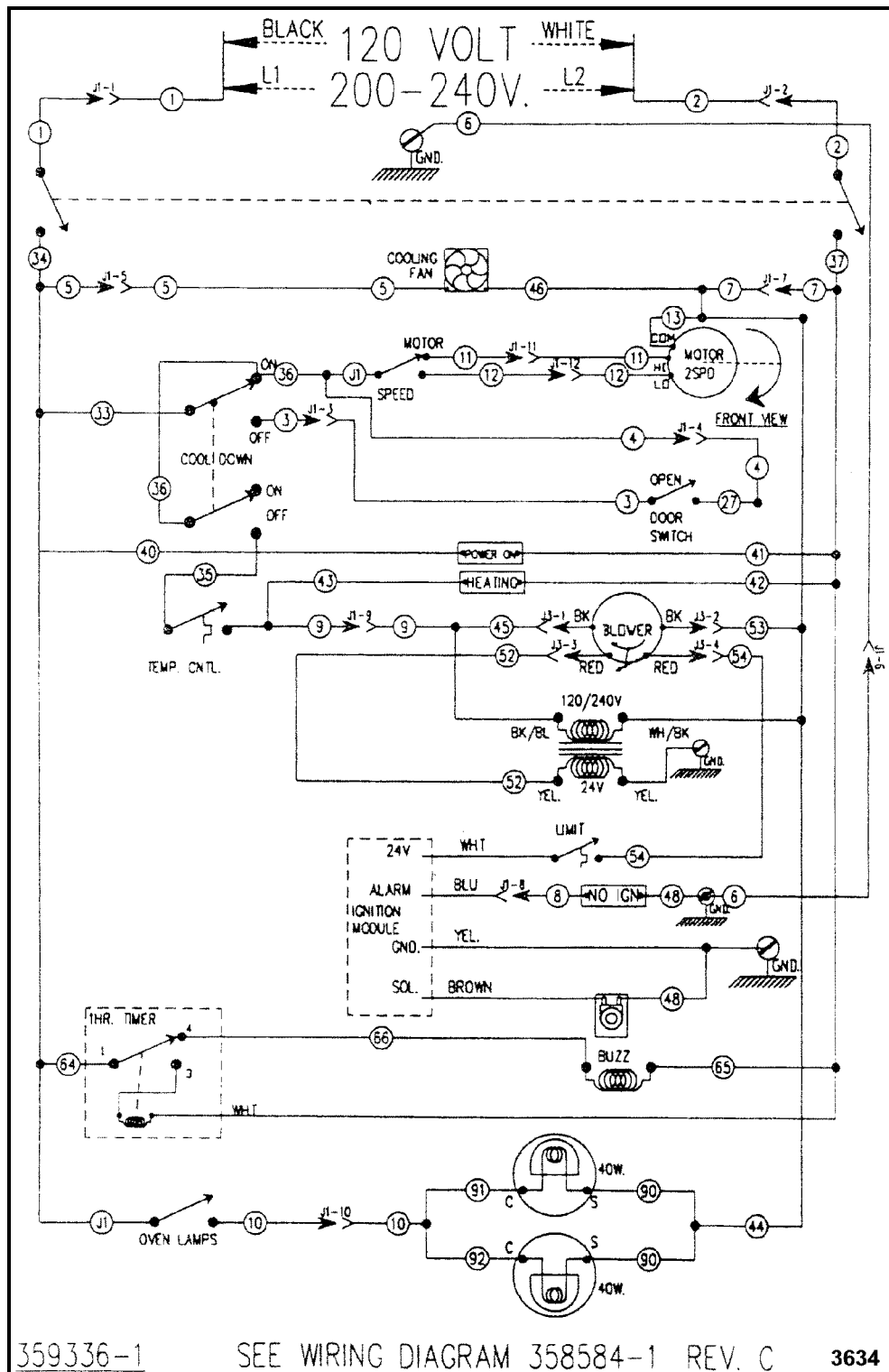
- D. Blower motor energized.

**NOTE:** The position of the door switch does not affect the operation of the cooldown cycle.

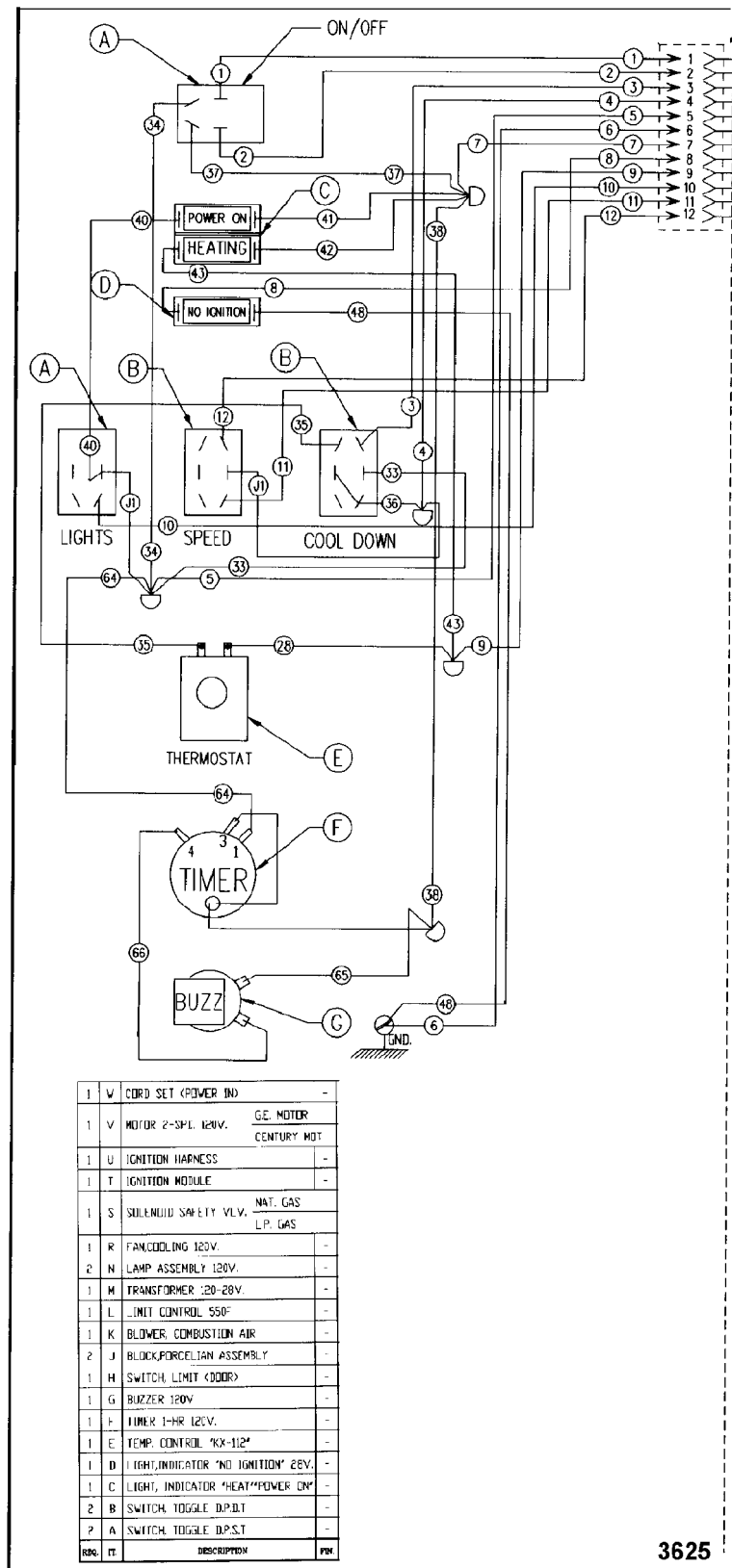
3. The oven will remain in this condition until the master switch is turned off or the cooldown switch moved to off.

# WIRING DIAGRAMS AND SCHEMATICS

## GCO4S - Schematic

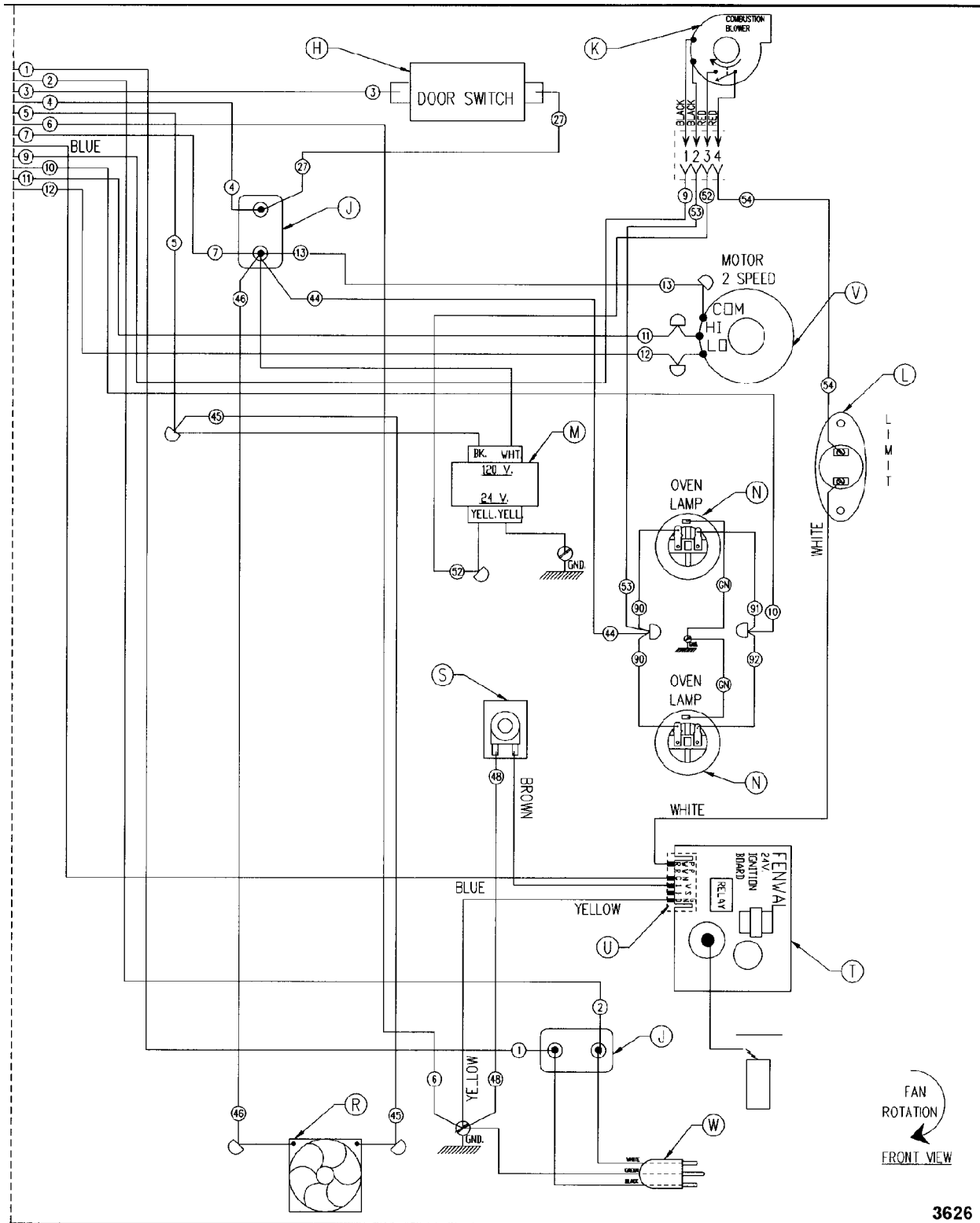


GCO4S - Wiring Diagram - Controls

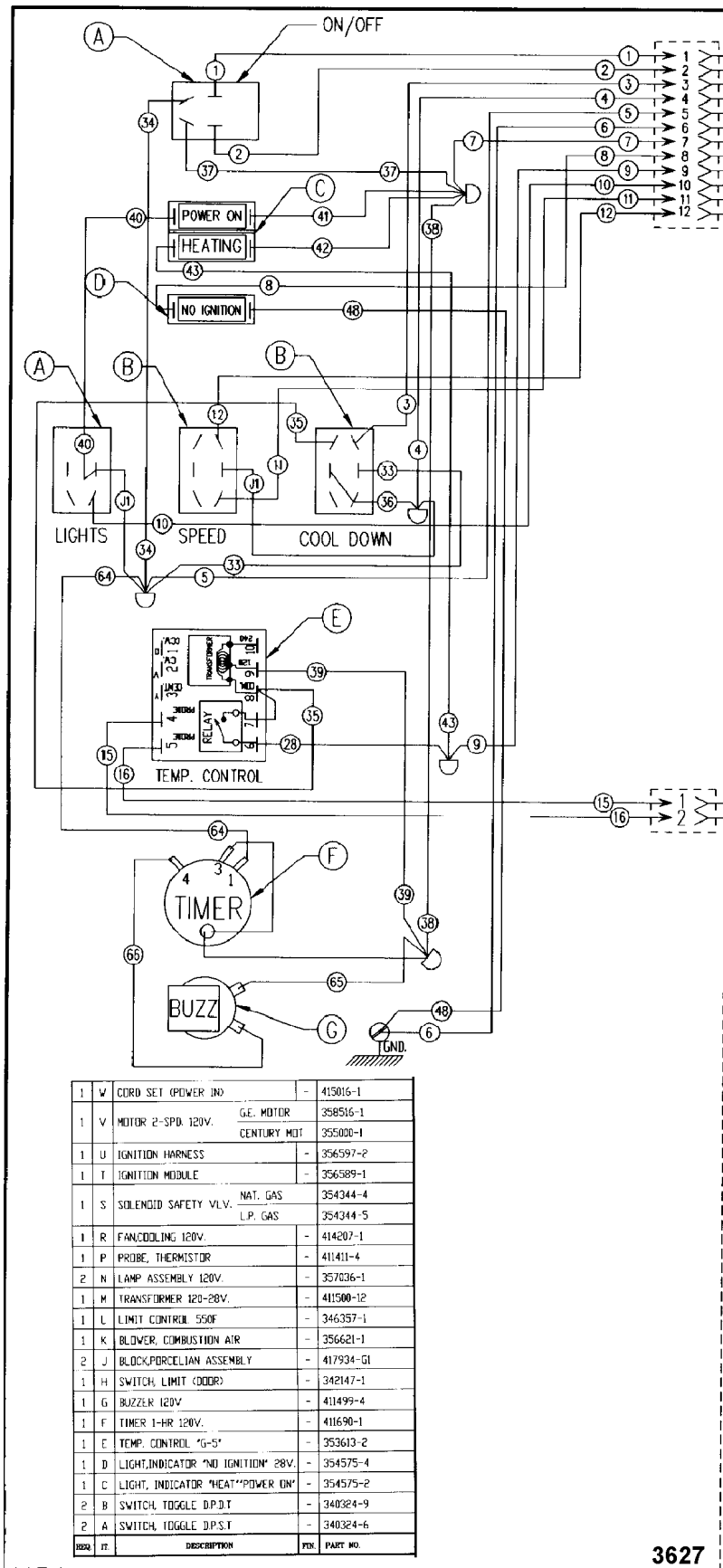


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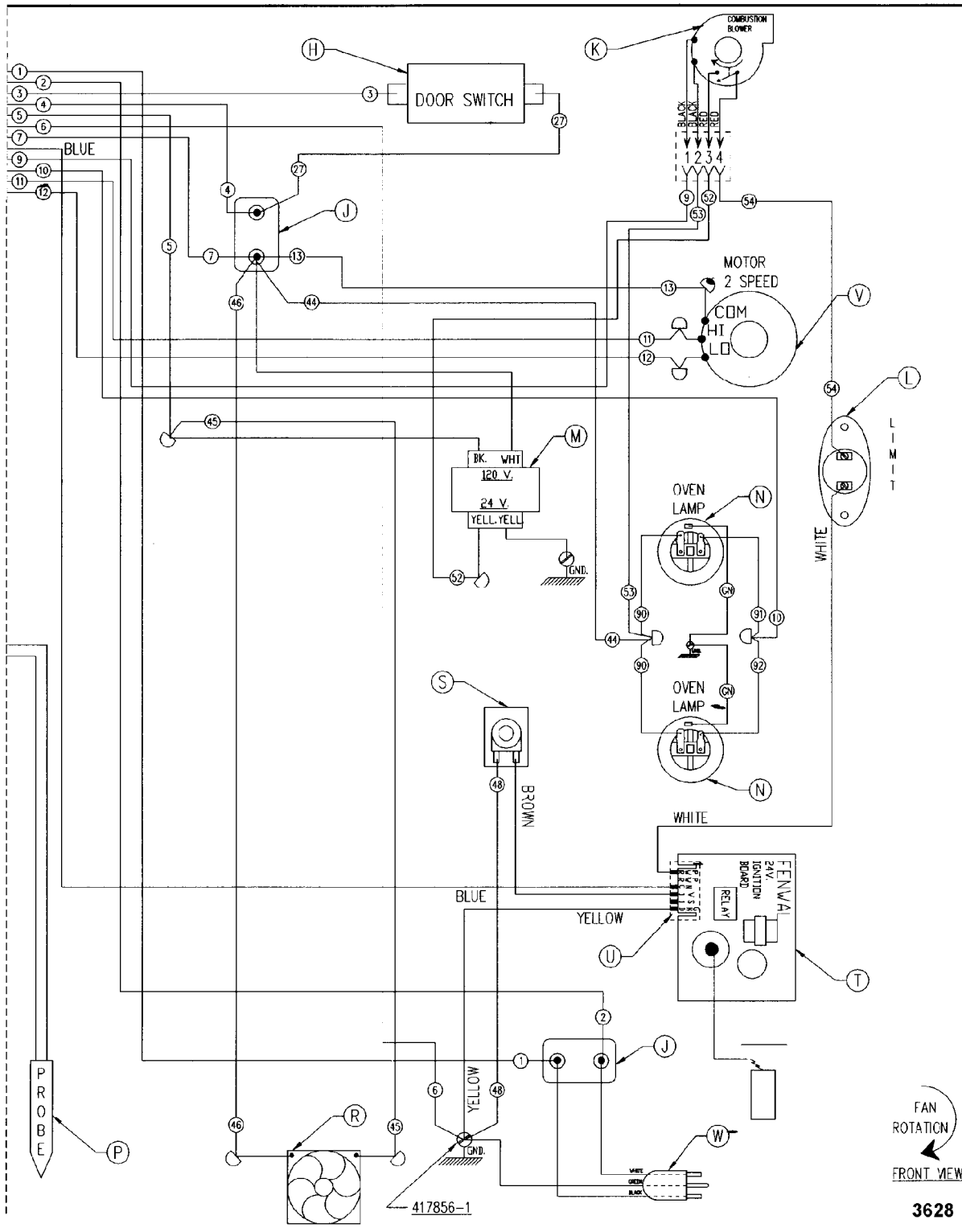
GCO4S - Wiring Diagram - Components

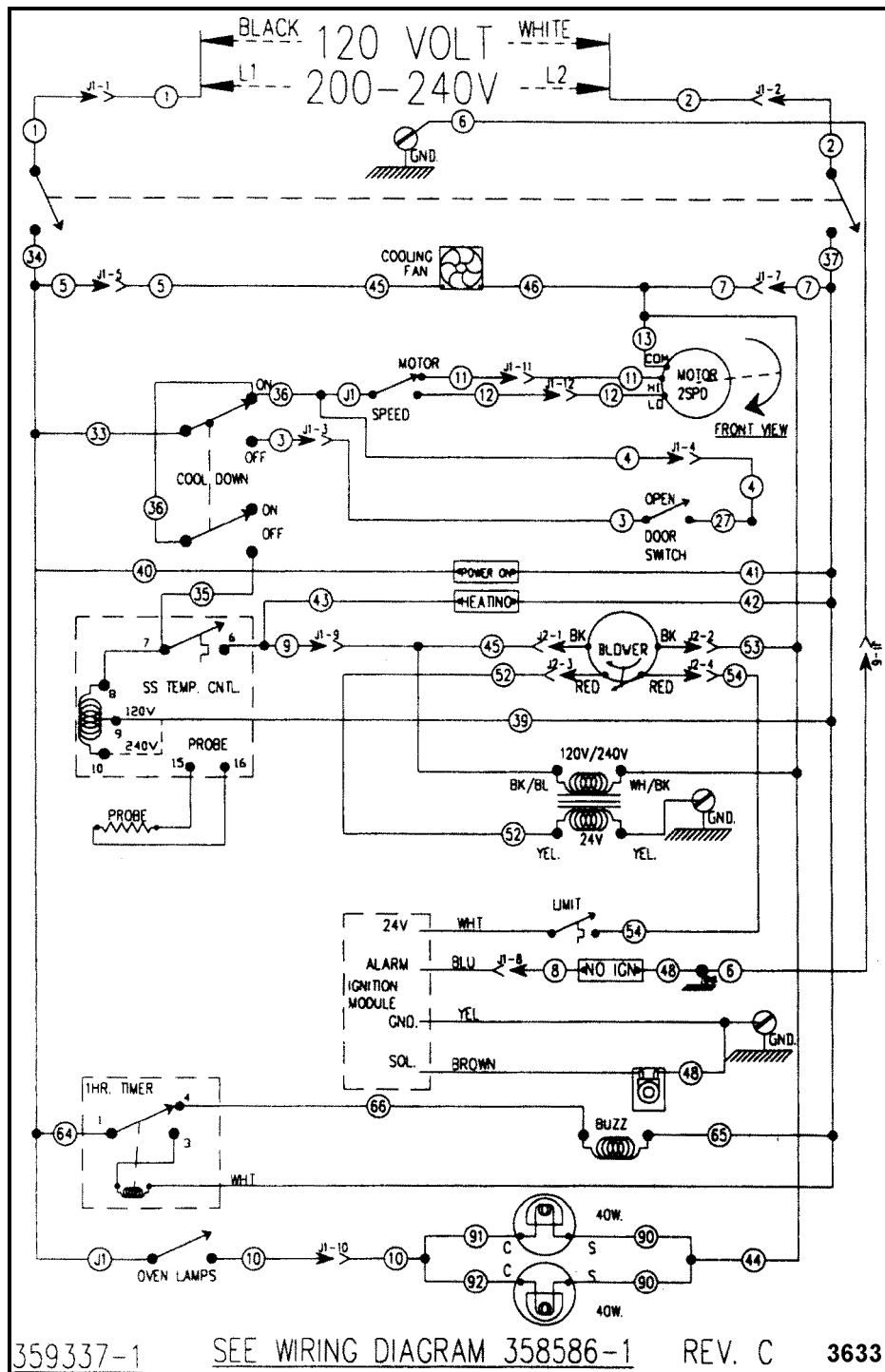


GCO4D - Wiring Diagram - Controls

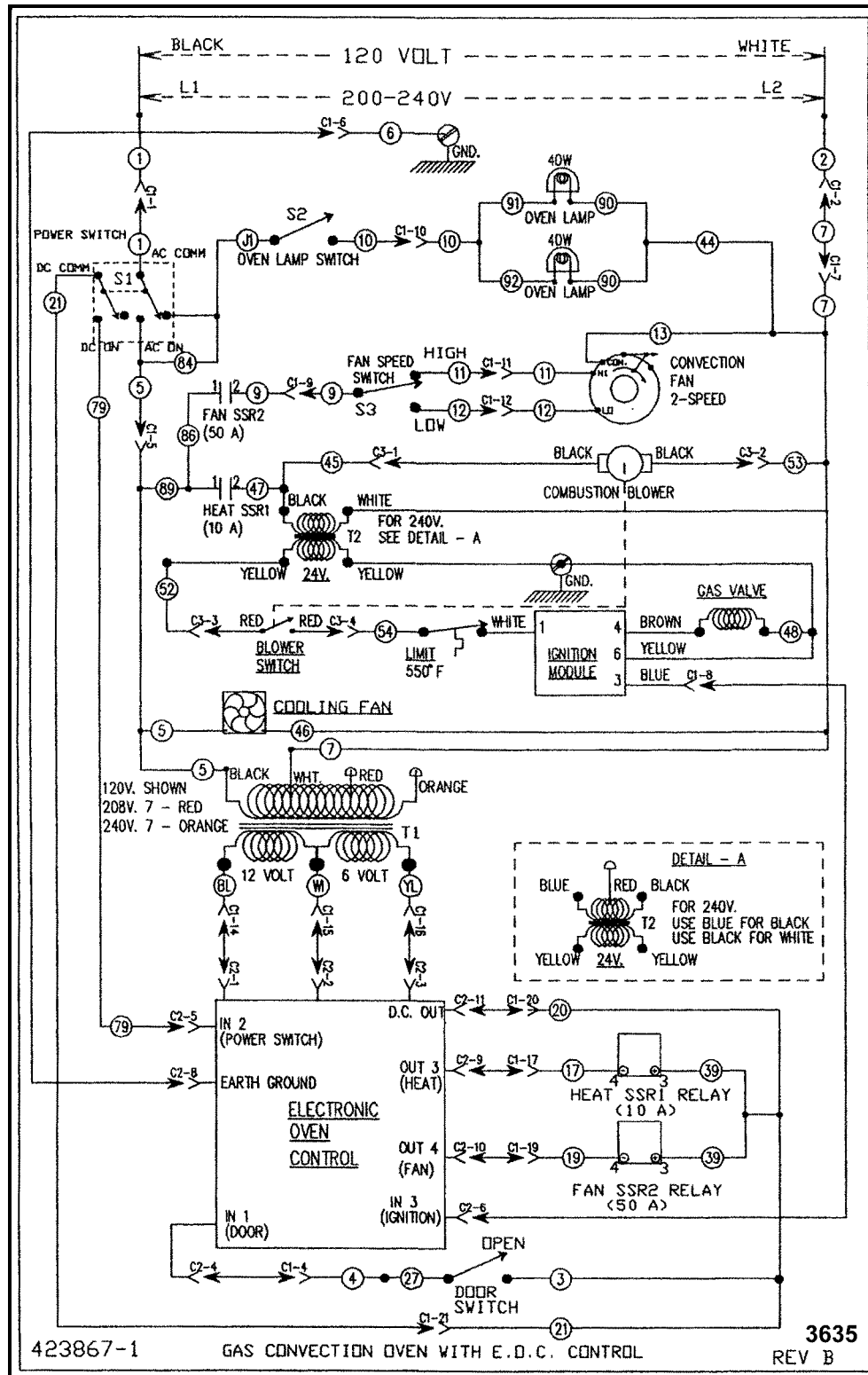


GCO4D - Wiring Diagram - Components

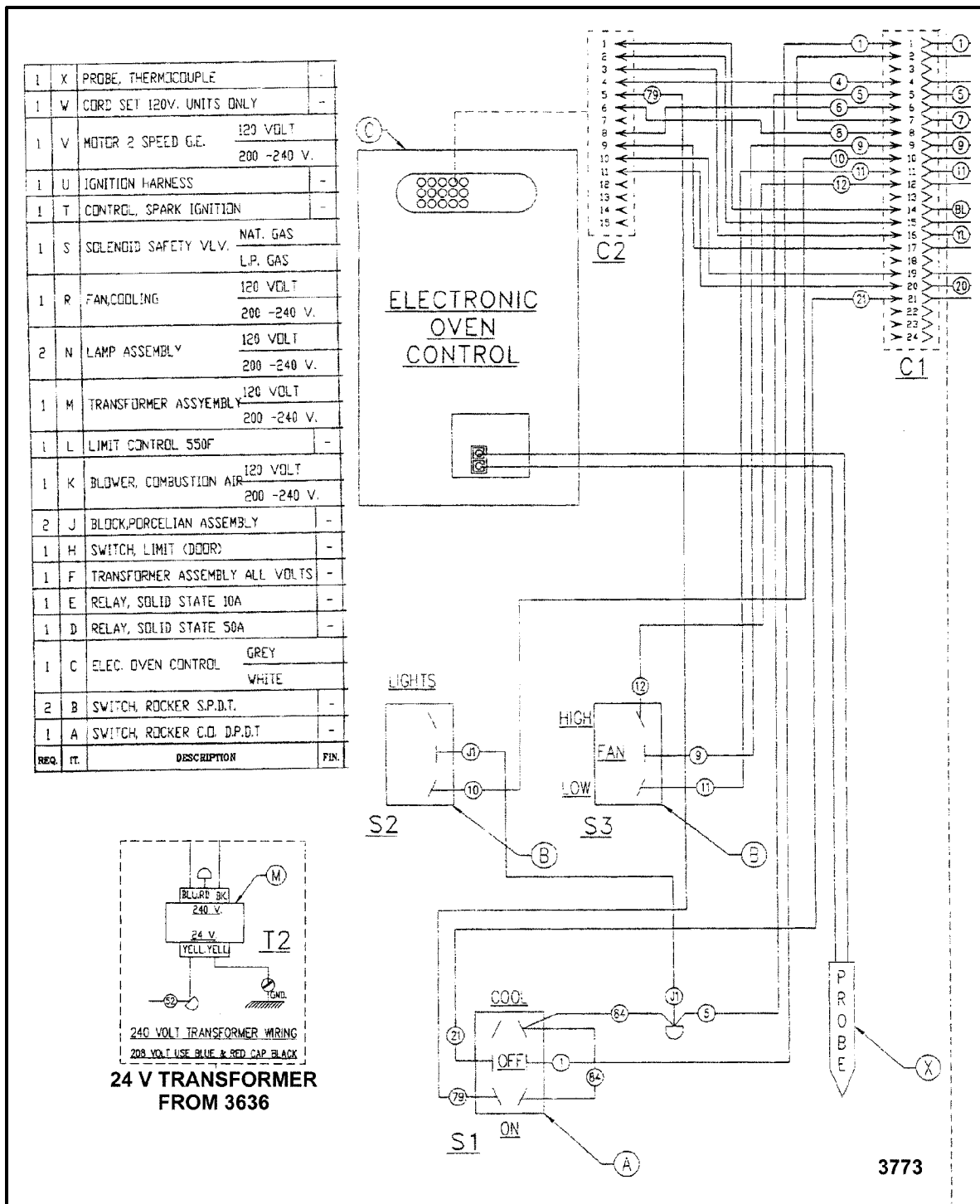




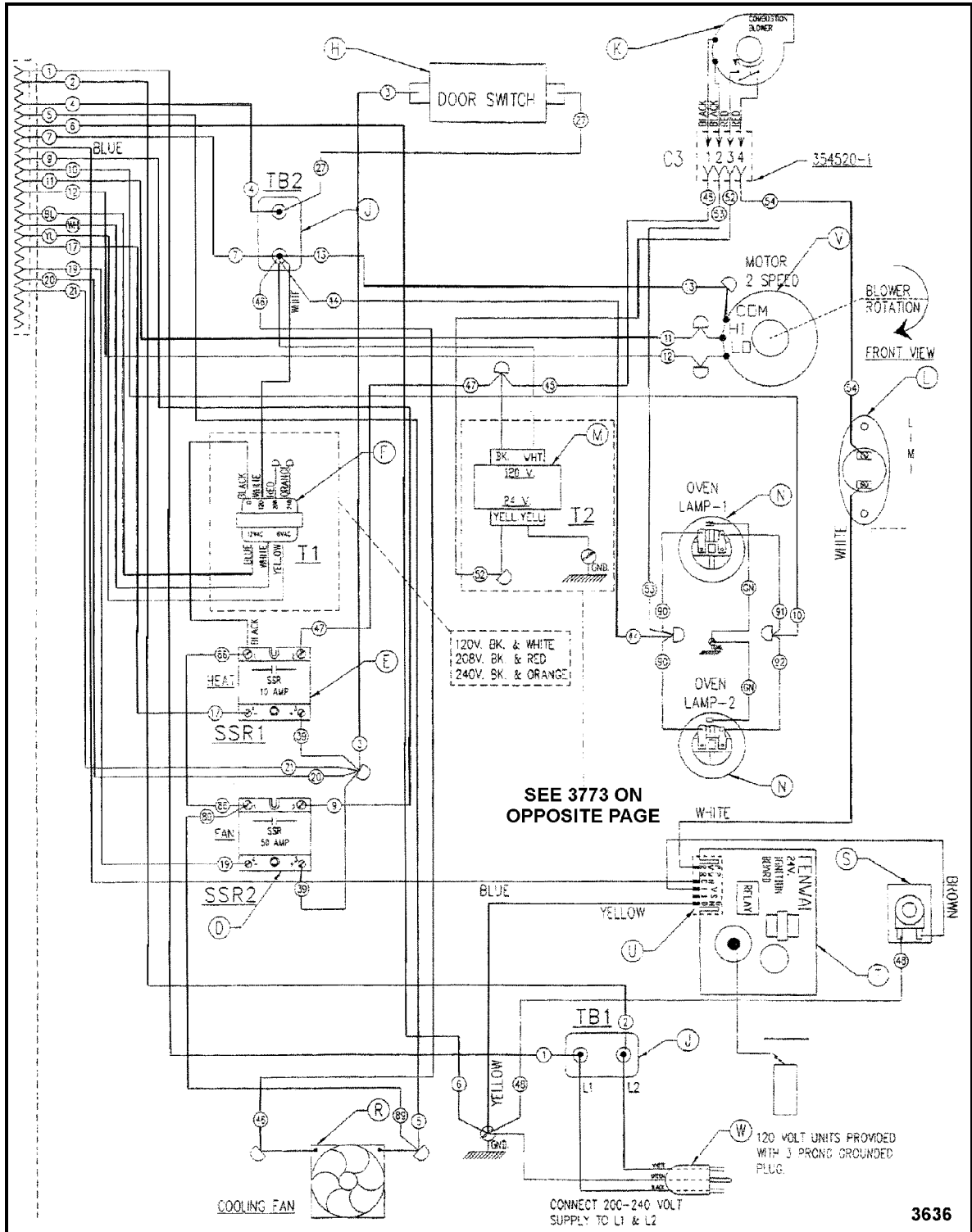
GCO4C - Schematic



GCO4C - Wiring Diagram - Control



GCO4C - Wiring Diagram - Components



# TROUBLESHOOTING

**WARNING:** CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TESTS OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

SYMPTOMS	POSSIBLE CAUSES
Blower motor doesn't run with master switch on.	<ol style="list-style-type: none"> <li>1. Line voltage.</li> <li>2. Master switch malfunction.</li> <li>3. Motor switch inoperative.</li> <li>4. Interconnecting wiring malfunction.</li> <li>5. Blower motor inoperative.</li> </ol>
Blower motor doesn't run with cooldown switch off, but runs with cooldown switch on.	<ol style="list-style-type: none"> <li>1. Door switch malfunction.</li> <li>2. Motor switch inoperative.</li> <li>3. Interconnecting wiring malfunction.</li> </ol>
Blower motor runs with cooldown switch off, but doesn't run with cooldown switch on.	<ol style="list-style-type: none"> <li>1. Cooldown switch malfunction.</li> <li>2. Motor switch inoperative.</li> <li>3. Interconnecting wiring malfunction.</li> </ol>
Combustion motor does not run (Heat Light ON).	<ol style="list-style-type: none"> <li>1. Combustion motor inoperative.</li> <li>2. Interconnecting wiring malfunction.</li> </ol>
Gas does not ignite. No spark. Combustion motor must be running. No Ignition Light OFF.	<ol style="list-style-type: none"> <li>1. Transformer inoperative.</li> <li>2. Centrifugal switch of combustion motor malfunction.</li> <li>3. High limit thermostat open.</li> <li>4. Interconnecting wiring malfunction.</li> <li>5. Spark module inoperative.</li> </ol>
Sparks but gas does not ignite.	<ol style="list-style-type: none"> <li>1. Manual gas valve inoperative.</li> <li>2. Gas supply malfunction.</li> <li>3. Gas solenoid inoperative.</li> </ol>
Gas ignites but will not maintain flame.	<ol style="list-style-type: none"> <li>1. Igniter lead connections malfunction.</li> <li>2. Ignitor ground inoperative.</li> <li>3. Combustion Blower not supplying enough air.</li> <li>4. Insufficient gas pressure.</li> <li>5. Incorrect polarity from transformer to spark module.</li> </ol>
Excessive or low heat.	<ol style="list-style-type: none"> <li>1. Temperature probe malfunction. (Thermostat malfunction - "S" models)</li> <li>2. Temperature control board inoperative.</li> <li>3. Potentiometers inoperative.</li> <li>4. Gas pressure incorrect.</li> <li>5. Orifice malfunction.</li> </ol>
Timer inoperative or not functioning properly.	<ol style="list-style-type: none"> <li>1. Timer inoperative.</li> <li>2. Interconnecting wiring malfunction.</li> </ol>
Cook mode OK, no Hold mode.	<ol style="list-style-type: none"> <li>1. Computer control malfunction.</li> </ol>
Hold mode OK, no Cook mode.	<ol style="list-style-type: none"> <li>1. Computer control malfunction.</li> </ol>
Cooling fan does not run.	<ol style="list-style-type: none"> <li>1. Master switch malfunction.</li> <li>2. Motor inoperable.</li> <li>3. Interconnecting wiring malfunction.</li> </ol>
Ready light does not light when oven in Cook & Hold mode.	<ol style="list-style-type: none"> <li>1. Oven has not cooled to Hold temp.</li> <li>2. Computer control malfunction.</li> </ol>
Ready Light lights at the end of "Cook" in Cook & Hold mode.	<ol style="list-style-type: none"> <li>1. Computer control malfunction.</li> </ol>
Uneven Cooking.	<ol style="list-style-type: none"> <li>1. Blower speed/direction.</li> <li>2. Blower needs adjusted.</li> <li>3. Poor combustion. <ol style="list-style-type: none"> <li>A. Combustion fan dirty.</li> <li>B. Gas pressure incorrect.</li> <li>C. Exhaust vent plugged or obstructed.</li> </ol> </li> </ol>
Intermittent problems.	<ol style="list-style-type: none"> <li>1. High ambient temperatures.</li> <li>2. Wiring connections loose.</li> <li>3. Cooling fan malfunction.</li> </ol>
Pulse circuit doesn't function properly. Blower motor operates continually.	<ol style="list-style-type: none"> <li>1. Computer control malfunction.</li> </ol>
No power to temp control board. (D Models)	<ol style="list-style-type: none"> <li>1. Cooldown switch on.</li> <li>2. Door or door switch open.</li> </ol>